

EARTH SCIENCES DIVISION

EH&S SELF-ASSESSMENT REPORT

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Introduction

LBNL's Environment, Safety and Health (ES&H) Self-assessment Program provides the mechanism for assuring that Integrated Safety Management (ISM) is fully implemented and effective at all levels of Laboratory activities and operations. The process is designed to ensure that work at LBNL is conducted safely and with minimal adverse effects to employees, participating guests, and subcontractors, the public, and the environment. The Earth Sciences Division (ESD) ES&H Self-assessment Program is a formal, internal process used to evaluate the ESD ES&H programs, policies, and processes. The ESD ES&H Self-assessment Program is conducted in accordance with the *PUB-3105 Division ES&H Self-Assessment Manual* and the Office of Contract Assurance (OCA) Guidance for Performing FY09 ES&H Division Self-Assessment.

ESD performs fundamental and applied geosciences research related to subsurface energy resources, nuclear waste disposal, environmental restoration and ecology, and climate change. ESD maintains experimental (laboratory and field) and computational core-capabilities in hydrology, atmospheric and ocean sciences, petroleum and geothermal reservoir engineering, seismic and electromagnetic geophysics, isotope geochemistry, environmental microbiology and rock and soil physics.

Each ESD staff member belongs to a Department (Climate Science, Ecology, Geochemistry, Geophysics, and Hydrogeology) aligned with their professional expertise, which also serves as their administrative home. Department Heads are responsible for safety, staffing, promotions, performance evaluations, and training matters.

Research in ESD is conducted within six Programs (Climate and Carbon Sciences, Geologic Carbon Sequestration, Environmental Remediation and Water Resources, Energy Resources, Fundamental and Exploratory Research, and Nuclear Energy and Waste), which are aligned to the major DOE funding sources. Each Program is led by a Program Head. The ESD staff are assigned to work on one or more projects in these six Programs. Projects are led by one or more Principal Investigators (PIs), who typically develop the research proposal and obtain the funding contract. Employees typically work on more than one project during a fiscal year, and as a consequence often work under the direction of more than one PI.

The ESD Organization Chart can be found at <http://esd.lbl.gov/about/orgchart.html>. The Division Director, Department Heads, and Supervisors (which includes Program Heads, and PIs) are part of the formal line management chain, and they have the responsibility for adherence to all LBNL safety and health policies and safe work practices. Lab space Lead PIs (LLPIs) are assigned by the Department Heads and they are responsible for communicating and implementing safety regulations and resolution of all safety issues within the laboratory space. The Work leads are assigned by the line management to assure that day-to-day work, operations, and activities in their assigned area(s) and activities are conducted safely and within established work authorizations.

I. FY08 ES&H ESD Self-Assessment Effectiveness Review Results

ESD has had a strong ES&H program as identified during the DOE reviews and audits, safety inspections, walkthroughs, and the FY08 Self-assessment Validation Report. Following the FY08 ES&H ESD Self-assessment, the OCA performed an effectiveness review of the process. The effectiveness review identified noteworthy practices and opportunities for improving the Division Self-assessment processes. The FY08 Self-assessment results were communicated to the staff by (a) providing a copy of the report to the ESD senior management (ESD council) and safety committee members, (b) posting the report on the

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ESD Health & Safety website (<http://esd.lbl.gov/FILES/resources/health&safety/FY08-ESD-validation.pdf>). and (c) presenting the findings, opportunities for improvement, noteworthy practices and divisional FY09 self assessment measures in an all hands Town Hall meeting (March 2009). Additionally, consistent application of the requirements by all ESD participants enhanced and streamlined the ISM documentation. The Job Hazard Analysis (JHA) and Training completion within the first 30 days of employment is required for all ESD staff and guests. Also in a continuous effort to ensure that new staff are aware of the ISM requirements, the ESD safety coordinator conducts monthly orientation for new ESD staff and guests to discuss the LBNL and ESD ISM, and introduce the divisional practices for incident reviews, ergonomic evaluations, and emergency preparedness. This has increased the ESD staff awareness and could also assist in preventing recurrence of adverse events and conditions.

FY08 Self-assessment ESD Findings:

- Some items that require CATS entry are entered into the Work Request Center database in lieu of CATS. Corrective Action: CATS: 6957; in FY09 all conditions, identified during a management walkthrough, requiring corrective actions were discussed with the staff, tracked by the safety coordinator, and entered into CATS. Observations and recommendations were discussed with the staff and tracked by the safety coordinator and the Department Heads.
- Some LLPI's walkthroughs were not documented upon completion. The ESD ISM requires that the record will be collected by the safety coordinator at the end of the fiscal year to be included in the annual self-assessment documentation. Corrective Action: CATS: 6958. All LLPIS are active scientists carrying out their research activities in their lab and they are present, walking through and evaluating their lab space. Documentation the LLPIS' walkthrough has improved due to continuous communication of the requirement at the ESD all hands town hall meeting, Department Head walkthroughs, discussions in the safety committee meetings. When a PI is not available to conduct the walkthrough, he/she delegated to an experienced lab staff member.
- One waste item was stored in excess of the ESD has 6 month limit on waste storage in an SAA. Corrective Action: CATS: 6959; it has been evaluated during the LLPI's monthly walkthrough and the Department Heads' bi-annual walkthrough (Checklist item L10: http://esd.lbl.gov/FILES/RESOURCES/HEALTH&SAFETY/ESD_inspection_checklist_R4.pdf) The safety coordinator also evaluates compliance during the waste management quarterly SAA review
- First Aid SAAR corrective actions were not entered into CATS. Corrective Action: CATS: 6960; In FY09 all first Aid SAAR corrective actions were evaluated, discussed with line management and entered into CATS as appropriate.

Institutional Findings:

The finding below was identified in the ESD ISM along with other division ISM plans and it was , categorized as institutional. It has to be noted that the Work Leads are assigned by the supervisor and they are clearly identified in the JHA database.

- The Division ISM Plan does not include a listing of Work Leads, as required in PUB- 3000 section 1.3.2.5. The wording in PUB-3000 should be clarified.
OCA Action: This item was incorporated in the CAP for HSS finding C-4. It was noted as such in the latest revision of the LBNL ISM Improvement Project Plan Attached is Appendix D of that plan (email from OCA manager dated 10/12/09.)

FY08 Self-assessment ESD Opportunities for Improvement:

- Ensure that all new ESD supervisors understand the JHA and they ensure that the JHA is updated when the work scope changes. In addition, some employees are uncertain about the JHA process and resulting training profiles. ESD Action: During the department and lab stand-downs, the staff JHAs

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were discussed and formal authorizations and work practices were evaluated. The ESD safety coordinator periodically reviewed JHAs as they were developed and discussed and resolved issues with the work leads and staff. Continuous communication of the requirements and review and discussion of the work authorizations between the staff and work leads help the staff understand the JHA process and ensured accurate JHA completion. By September 30, 2009, ESD had 98% of all staff and guest JHAs completed and accurate.

- More creative conservation techniques and measures are necessary to invigorate the Working Green Initiative. ESD Action: ESD participated in the EMS audit and the auditor was impressed with the staff's knowledge and actions to reuse and recycle in the lab. The division staff proactively enquired about the cafeteria take-out box composting and took the initiative to start their own collection points when no composting container was made available in Bldg. 90.
- Ensure that all ESD guests working onsite have the appropriate, documented on the job training (OJT) to conduct their work safely. This ESD OJT is the informal training provided by the LLPIs to staff working with specific equipment or procedures and it is under LLPI management control. The OJT is commonly practiced at different ESD labs but it is not usually formally documented. ESD Action: This has been incorporated in the FY09 ESD self-assessment measures and was investigated and discussed with the staff. OJT has been discussed at ESD all hands town hall meeting, department head walkthroughs, discussions in the safety committee meetings. OJT implementation was also evaluated during the mini HSS audit with some labs fully documenting the process and other still evaluating ways to implement it. ESD will continue to ensure that the OJT is fully developed in the ESD labs.
- Work with the ESH division to develop task-based JHA for ESD off site fieldwork. ESD Action: This has been incorporated in the FY09 ESD self-assessment measures and was investigated and discussed with JHA program manager but it was put on hold due the HSS findings on JHA and the ongoing LBNL effort to re-evaluate and redesign the JHA process. ESD will continue to evaluate ways to link it to the JHA.
- Implement the Subcontractors JHA program that was initiated by ESD on 10/31/08 and incorporate any pre-existing equipment service contracts. ESD Action: The SJHA program was fully implemented on October 30, 2008.
- Continue educating the staff on the ISM requirements as they are updated to meet institutional changes. ESD Action: The LBNL and ESD ISM discussed at ESD all hands town hall meeting, department head walkthroughs, discussions in the safety committee meetings and in the New ESD staff Orientation.
- The safety coordinator and other ESD staff members, as appropriate, should be trained as ergo advocates when the training is offered. ESD Action: Three (3) ESD staff were trained as ergo advocates.
- The safety coordinator should closely monitor the ergo evaluations that are open for more than 6 months and meet with the employee and the supervisor to access the pending issues. ESD Action: The safety coordinator should closely monitors the ergo evaluations and documents them on the ESD safety quarterly reports which are distributed to the ESD management (Division council) and safety committee.
- All ESD employees who telecommute should use EHS059 to evaluate their workstation. ESD Action: This has been incorporated in the FY09 ESD self-assessment measures and was investigated and discussed with the staff.

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- All students producing hazardous waste need to be trained to maintain complete log of the hazardous constituents they generate. ESD Action: It is the LLPIs responsibility to ensure that the students trained to maintain complete log of the hazardous constituents they generate. No issues regarding students not maintaining proper logs of hazardous waste constituents were identified in FY09.
- More attention was given to communicating with SAA custodians during the quarterly SAA inspections, with positive results and improvement in the SAA compliance rate. ESD Action: The safety coordinator communicates all issues identified during the quarterly SAA inspections to the SAA custodians and all LLPIs receive a summary of the identified issues. The SAA inspection findings are discussed in the ESD Council and safety committee.
- Near miss database and formal communication is developed to track and distribute the information to the staff. ESD Action: The Near miss program was developed, discussed in the safety committee and communicated to the staff via a level-1 email. The Web page was updated (<http://esd.lbl.gov/Resources/Health&Safety/nearmissprogram.html>) along with a web database (<https://esd.lbl.gov/feedback/>) to track near miss incidents.

FY08 Self-assessment ESD Noteworthy Practices:

- The ESD Director supports the Division's safety program, and leads through articulating his ES&H vision and expectations at all divisional and department level gatherings and during walkthroughs. In FY08, the ESD Director encouraged staff to see safety as an integral part of the job requirement. He consistently communicated this message through the ESD weekly council meetings, in ESD Level 1 emails, and at Town Hall meetings.
- The ESD Director emphasized the use of safety glasses in the lab. ESD requires that all staff working in the labs wear safety glasses. All staff were notified that they could get prescription safety glasses free of charge at the medical center.
- The Geochemistry Department head distributes summaries of the weekly Division Council to all department members and requests input. He emphasizes safety as the first item in these communications.
- ES&H is a standing agenda item at quarterly Town Hall meetings, and the weekly Division Council meetings. The ESD Safety Coordinator participates at the Division Council meetings.
- The ESD Safety Coordinator submits a quarterly ES&H report to Division management and safety committee. This report summarizes the main ESD ES&H activities, incidents, authorization, training and JHA completion, OSSEPPS, ERGO evaluation and CATS. It is an effective tool for communicating the main safety issues to the division management.
- The ESD Director participates in the ESD Safety Committee meetings as his schedule permits. The Department Heads have been assigned permanent members of the ESD Safety Committee. This is included in the ESD ISM Rev.8.
- The ESD Health and Safety Web Page is continually updated and it is currently re-designed.
- The ESD Safety Coordinator is invited to Departmental meetings to present Health and Safety information.
- In order to understand the hazards of the Nanotechnology and communicate them to the ESD staff, the ESD Safety Coordinator attended a daylong seminar entitled, "EH&S Challenges of the Nanotechnology Revolution" on 8/6/08. This course was intended to introduce EH&S personnel, scientists and managers to the field of nanotechnology and review potential health, safety and environmental concerns associated with this field. The division director supports the safety coordinator's continuous education.
- The ESD staff are well informed of the requirements and have already proactively working with the EH&S staff to resolve issues like identifying and cataloging modified electrical equipment and recognizing the need for task-JHA for field work.

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- The ESD staff were requested to participate in the first ISM survey; 11.5% (32 of 278) of the staff responded. The results were discussed in the safety committee and will further analyzed to implement processes as suggested.
- ESD field staff have been conducting offsite work with no major incidents.
- DOE BSO V&V Effectiveness Review auditors identified a noteworthy practice, the ESD inspection log of the labs, which is used to document the monthly LLPI walkthrough.
- A list of ESD controlled safety documents is included in the ESD ISM Rev.8.
- The use of EHS059 identified a new employee as high risk and it prevented an ergonomic injury; his workstation was evaluated and monitored until his risk level was lowered.
- A DOE BSO representative is invited to the safety committee, ESD SAA quarterly walkthroughs, and ESD walkthroughs.
- The CDC review of the ESD work did not identify any deficiencies and found that our select agent operation had good safety/security controls, and we were well organized.

II. FY09 Performance Measures

ISM CORE FUNCTION 1: DEFINE WORK

1. Division revises division ISM plan to reflect a) ES&H policy changes, and b) updates to the Institutional ISM plan. Line management communicates updates to the plan to division personnel and assesses effectiveness of that communication.

- 1-1 What is the status of the Division ISM Plan relative to the Division ISM Implementation Plan Review (Attachment A)? Has the checklist been completed for the Division Plan? Have any Gaps been identified? Has a Corrective Action Plan been developed to resolve any identified Gaps?

The ESD safety coordinator updated the ESD ISM Plan to reflect PUB-3000 and Institutional Integrated Safety Management System (ISMS) plan changes made subsequent to the last revision of the division ISM plan. The ESD ISM Rev.9 also addressed the review comments provided by the EHS Division reviewer and to requirements listed in Attachment A, *Division ISM Implementation Plan Review*. A completed Attachment A and the revised ESD ISM Plan are included in the FY09 ESD Self-Assessment Report.

The ESD ISM Rev.9 was distributed for review to all members of the safety committee, and the ESD director and upon comment resolution it was approved and signed on October 2009. The ES&H Director was contacted to verify the EH&S level of support to ESD in FY08, there is no change in the assigned EH&S support (email notification in FY08 from EH&S Director to ESD Safety coordinator).

If during the self-assessment validation, OCA identifies any gaps in the ESD ISM Plan, ESD will develop corrective actions and revise the plan in order to address the OCA comments.

- 1-2. Are the EH&S roles and responsibilities described in Division Plan current with the Division's business practices? Were there any business changes that resulted in changes to the Division's ES&H management practices?

The ESD ISM Plan Rev.9 clearly identifies the EH&S roles and responsibilities of the management, supervisors, PIs, LLPIs, work leads and staff. The staff EH&S roles and responsibilities also discussed on the ESD Safety & Health website (<http://esd.lbl.gov/resources/health&safety/>) and the ESD New employee Orientation.

The EH&S roles and responsibilities are also communicated at the ESD Town Hall meetings, level-1 emails, the safety committee meeting (August 2009) and the ESD New employee Orientation. The EH&S roles and responsibilities are also discussed by the ESD director at the Division Council to reinforce line management responsibility, and by the ESD department heads at department and group meetings.

The ESD Director supports the Division's safety program, and leads through articulating his ES&H vision and expectations at all divisional and department level gatherings and during walkthroughs. He encourages staff to see safety as an integral part of the job requirement and consistently communicated this message through the ESD weekly council meetings, in ESD Level 1 emails, and at Town Hall meetings. ES&H is a standing agenda item at quarterly

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Town Hall meetings, and the weekly Division Council meetings. In FY09, two (2) Town Hall meetings (on 10/21/08 and 12/9/08) were held to exclusively address ISM implementation and safety issues and prepare the staff for the HSS audit. The ESD Safety Coordinator participates at the Division Council meetings. The ESD Director participates in the ESD Safety Committee meetings as his schedule permits. The Department Heads are members of the ESD Safety Committee.

The ESD Safety Coordinator submits a quarterly ES&H report to Division management and safety committee. This report summarizes the main ESD ES&H activities, incidents, authorization, training and JHA completion, OSSEPPS, ERGO evaluation and CATS. It is an effective tool for communicating the main safety issues to the division management. The ESD Safety Coordinator is invited to Departmental meetings to present Health and Safety information. The Safety Coordinator also conducts the monthly New ESD Employee Orientation.

The ESD Health and Safety Web Page is continually updated to include new ES&H requirements and information. The links to the ESD Safety and Health web are provided during the ESD New employee Orientation. Additionally, the one page summary documents [Health_and_Safety@agance, ISM@agance, JHA@agance, Line_Management@agance (<http://esd.lbl.gov/resources/health&safety/docs.html>)] summarize the requirements and point to the web for a more detailed discussion.

- 1-3. Are the Work Locations, Facilities and Work Location Hazards lists (e.g. HMS System) current within the Division ISM Plan? Were there any facility and/or work scope changes that resulted in changes in the Division's ES&H management practices?

The work locations are listed in the ESD ISM Plan. Additionally the ESD User facilities and Centers are identified on the ESD website (<http://esd.lbl.gov/research/facilities/>). As part of the HSS audit preparation, the Hazard Management System (HMS) was updated for all ESD labs. In order to ensure that all LLPIs and lab contacts knew how to use the HMS database, the ESD safety coordinator arranged for the EHS SME to provide classroom training to the ESD staff on how to use and update the HMS database; the training was conducted on November 2008. The LLPIs oversee this activity for their respective labs. Updating the HMS for lab space is included on the checklist used during the Department Head walkthroughs (http://esd.lbl.gov/FILES/RESOURCES/HEALTH&SAFETY/ESD_inspection_checklist_R4.pdf). Additionally, all hazards in each lab are identified on the entrance door placard.

2. Division ensures workers have a current (reviewed/reauthorized within the previous 12 months) Individual Baseline Job Hazards Analysis (JHA) that accurately reflects the work performed and hazards present.

- 2-1. Did we document our process for performing JHA's in our ISM Plan?

The ESD ISM formally discusses the JHA process. All ESD Staff (including guests and students) are required to have an active JHA within the first 30 days of employment. The ESD web (<http://esd.lbl.gov/resources/health&safety/jha.html>) lists the requirements and step-by-step instructions on how to complete a JHA. Additionally, the ESD developed one page Job_Hazards_Analysis@agance(<http://esd.lbl.gov/files/RESOURCES/HEALTH&SAFETY/>

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[AAG-JHA.pdf](#)), the JHA discussion in the New ESD Orientation, and one-on-one sessions between staff and the safety coordinator ensure that all ESD supervisors, work leads and staff understand the JHA requirements and instructions on how to complete it. The ESD safety coordinator quarterly reviews a sample of JHAs, resolves any issues with staff and discuss in the safety committee meetings.

It was identified during the HSS audit preparation that a number of staff had no clear understanding of the JHA process. The web update, the Job_Hazards_Analysis@aglace and the Safety Coordinators discussions with the staff improved the staff awareness of the requirements. Additionally, the safety coordinator has been invited to participate in the LBNL JHA Advisory Group that will evaluate changes to the JHA based on the HSS audit findings.

ESD staff and guest JHA completion is monitored by the Division management, it is discussed in the ESD Council meetings, safety committee meetings and a list of incomplete JHA is included in the quarterly safety report prepared by the safety coordinator. The JHA completion is required for all staff the request renewal of their guest status and is monitored by the ESD Department Heads and the Business Manager.

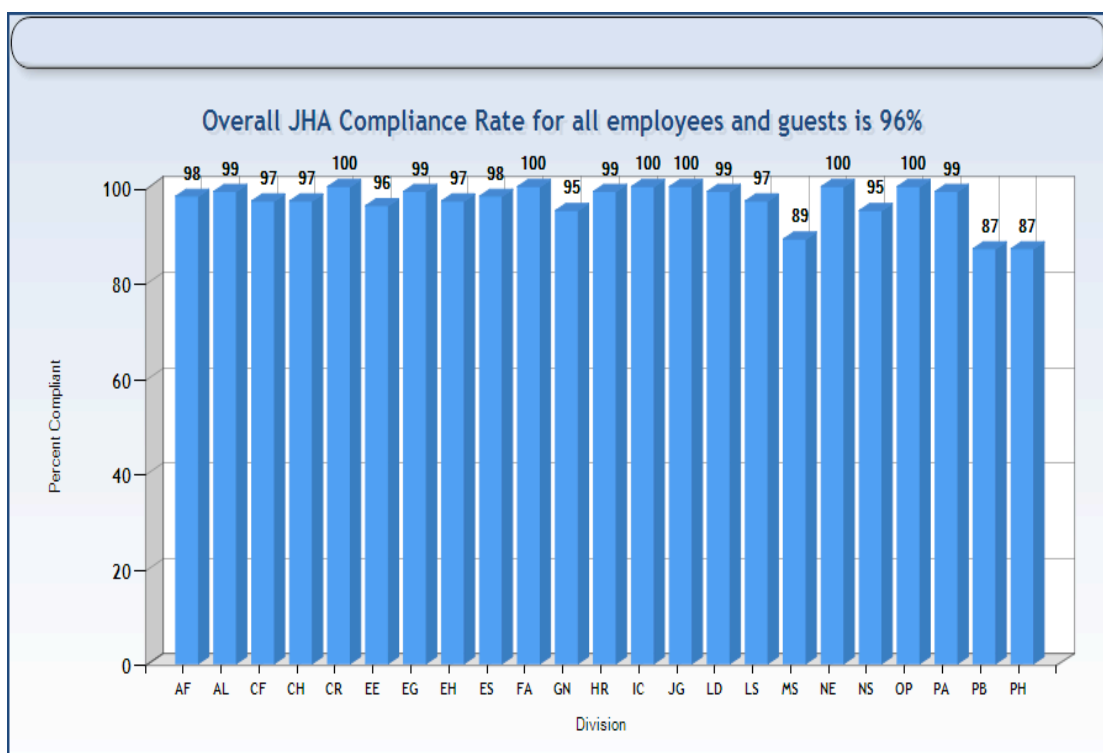
2-2 What percentage of staff have a current Individual Baseline JHA?

As part of the ESD Self-assessment process, the ESD safety coordinator reviewed the JHAs of three ESD departments in order to ensure that ESD would meet the FY09 PEMP Measures requiring 95% of affected LBNL staff will have active and accurate JHAs signed by the worker and respective supervisor/work lead.

The main issues identified were that (i) a number of staff still had no detailed group work scope, since the group JHA were update after the individuals' JHAs were approved and any group work scope updates did not automatically transfer to the individuals' JHA and (ii) individual work scopes that do not identify additional work should point to the group(s) ones or include enough information to address any additional tasks listed. The ESD safety coordinator worked with the JHA program manager, the ESD supervisors and staff to ensure that the ESD JHAs were updated to correctly and accurately reflect the work description, hazards and controls of the staff, as a result, ESD met the PEMP measure.

On September 30, 2009: 98% of the ESD staff had a completed JHA, seven (7) staff did not have a fully approved JHA. Eleven (11) of the completed JHAs still required some modification to update the work scope description, which indicated that 97% of the completed JHAs were accurately describing and authorizing the individuals' work. This information was sent as a level-1 to all ESD staff. The JHA program manager concurred with the above stated completion statistics and congratulated the ESD staff of an exceptional performance (email from JHA program manager dated 10/1/09).

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In addition to the JHA, ESD implemented the task-based JHA, i.e., a JHA specific to tasks that are unpredictable, short-term, or unusual in nature. A task-based JHA was completed for an ESD employee conducting onsite fieldwork. It was maintained as a hard copy record with no connection to the individuals JHA and no tracking through the JHA database, since the database does not generate tracking numbers for task JHAs and does not allow documents to be attached. This process will be further evaluated and improved as part of the overall institutional evaluation and redesign of the JHA as presented in the HSS findings.

Additionally, in the FY08 self-assessment, ESD identified the need to incorporate off-site field activities in individual JHAs. In FY09, this item was investigated and discussed with JHA program manager but it was put on hold due the HSS findings and the ongoing LBNL effort to re-evaluate and redesign the JHA process.

In summary, ESD groups that conduct fieldwork identified it as a task on the group JHA with the Off-site Safety Environmental Protection Plans (OSSEPPs) as the appropriate hazard analysis, controls, and work authorizations for fieldwork. The OSSEPPs are issued by the ESD PI responsible for the field activity and managed as hard copies by ESD. The OSSEPPs are not formally incorporated into the JHA database and the specific training requirements are not linked to the individuals' training profile. ESD has requested that the EHS Division SME develops a process to formally link the OSSEPPs hazards and training to the employee's JHA.

On April 27, 2009, the ESD Deputy Director, safety coordinator and JHA Program Manager met to discuss and evaluate ways to formally link the OSSEPPs to the workers' JHA in an effort to improve the off-site work controls and make the off-site work authorizing documents readily available and transparent to the ESD users (i.e., employees, supervisors and work leads). An option discussed was to maintain the current format and local controls and

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evaluate the forthcoming changes and updates to the Tasked Based JHA. We should follow a similar process and eventually link the OSSEPPs to the JHA the same way an AHD or Bio authorization would be linked to an individual's JHA. This will happen after the JHA system updates are implemented.

It was also noted that PUB 3000 section 5.5, *Off-Site Safety*, has not been updated by EHS Division and there may be a disconnect between the current practices and the institutional requirements for off-site work. It was discussed this sections be reviewed and, if appropriate, revised to meet the work authorization requirements of other PUB3000 chapters.

3. Division ensures that before non-construction work is performed by Subcontractors, Vendors, or Guests at LBNL facilities, a Subcontractor Job Hazards Analysis and Work Authorization (SJHAWA) form is prepared and pre-job meeting is held to review and sign the SJHAWA form. Oversight of the work is performed and recorded using a risk-based graded approach.

- 3-1. How were the LBNL non-construction safety assurance requirements (for work performed by Subcontractors, Vendors and Guests at LBNL facilities) communicated to Division staff?

ESD fully implemented the SJHAWA process on October 31, 2008. In preparing for SJHA implementation, the ESD business manager, business administrator, and safety coordinator met with the SJHA program manager in order to evaluate and access the best and most efficient way to implement this new process. The SJHA program manager presented the SJHA process requirements in the safety committee (August 2008), implementation issues were also identified at that meeting, including questions about cost increase of existing contracts and who should be included in the initial training. The SJHA project manager introduced the SJHA process to the ESD staff at a Town Hall meeting on 10/22/08. On October 28, 2008, the SJHA program managers conducted classroom training for the ESD LLPIs and lab staff, as they are main group procuring equipment and/or have equipment servicing contracts. The SJHA program manager has also been available for one-on-one training and issue resolution throughout the year.

The SJHA process was outlined on the ESD web

<http://esd.lbl.gov/Resources/Health&Safety/sjha.html>, the one page SJHA@aglance (<http://esd.lbl.gov/Resources/Health&Safety/sjha.html>), and is included in the ESD ISM Rev.9.

The ESD safety coordinator participates in a LBNL User Work Group that reviews and provides input on the Non-Construction Safety Assurance Program and evaluates improvements on the lab wide SJHA process. The ESD safety coordinator communicates main issues to the safety committee.

- 3-2. How does the Division determine when SJHAWAs are required?

It is the LBNL and ESD policy that all subcontractors' onsite, hands-on work for a new equipment installation and/or service or an existing service contract requires a SJHAWA. The ESD Requestor (the individual requisitioning the work to occur) works with the Safety Coordinator and other Subject Matter Experts to determine the need for a SJHAWA. The

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SJHA Program Manager also monitors new procurement activity and emails the requestor and safety coordinator of the required steps in order to complete the SJHAWA.

ESD requires that all guest who work onsite for more that 30 days complete the JHA and take appropriate training, all other guests who stay for less that 30 days complete the SJHAWA, unless directly supervised at all times.

- 3-3. Are the Division's completed SJHAWA forms signed by the Requester and initialed by the Subcontractors, Vendors and Guests?

In FY09 the ESD safety coordinator reviewed all SJHAWAs and participated in most of the pre-job meetings in order to ensure that the staff understood the new requirements, the subcontractors understood that they can only perform work as defined in the approved SJHAWA and the form was properly filled. In June 2009, the SJHAWA Program Manager reviewed the ESD SJHAWA forms and did not identify any deficiencies. However, it should be noted that the SJHAWA form does not have a specific field requiring the subcontractor's signature. This has been discussed in the SJHA user group and will be addressed as a future improvement.

- 3-4. Are work oversight observations recorded at a frequency that is commensurate with the hazard level of the work?

The ESD ISM Rev.9 lists the requirement for oversight observation by the requestor based on the hazard level of the work as follows: The ESD Requester should provide oversight and keep records of their visits to the work site and observations. Low-level hazard work (not requiring formal authorization) oversight is comparable to the oversight of similar activities performed by LBNL employees. High-level hazard work (requiring formal authorization) must be checked at a minimum frequency of once per workday, or more frequently if required by work authorizations.

All FY09 ESD SJHAs listed no high hazard work, when electrical work was needed it was performed a LBNL authorized electrician. The ESD staff have found the SJHA process hard and often suggested that LBNL should centralize and authorize work for subcontractors working on-site and it should not be managed by each division. Equipment under warranty or existing servicing contracts were sent to vendor for repairs instead of having the subcontractor work on-site.

- 3-5. Does the Division have a repository for completed SJHAWA forms?

The completed ESD SJHAWA forms are forwarded to the safety coordinator who maintains them as stated in ESD ISM Rev.9, the ESD web <http://esd.lbl.gov/Resources/Health&Safety/sjha.html> and the one page summary, SJHA@aglace (<http://esd.lbl.gov/Resources/Health&Safety/sjha.html>). In June 2009, the SJHAWA Program Manager contacted the ESD Safety coordinator and reviewed the completed ESD SJHAWA forms.

The ESD safety coordinator maintains an electronic listing the active SJHAWAs and a hard copy of the signed document.

ISM CORE FUNCTION 2: IDENTIFY HAZARDS

4. Divisions review work activities to identify, analyze, and categorize hazards and environmental impacts for the associated work. Examples of hazard inventory include: Hazards Management System (HMS) database (or equivalent), project safety review, workspace safety review, Job Hazard Analyses (JHA), environmental review (NEPA/CEQA), and chemical inventory.

4-1 Review division's hazard identification and inventory documentation.

The ESD ISM Plan specifies several processes to identify hazards, including the JHA, other Formal Work Authorizations as discussed in PUB3000, the Safety Review Questionnaire (SRQ), the OSSEPPs, and identification of hazards through the responsibilities of the PI and LLPI.

ESD PIs and LLPIs are responsible for considering ES&H hazards, risks, and concerns during the work planning process and for determining appropriate controls prior to authorizing work. ESD work authorization procedures are tailored to the level of hazard of the work. Work recognized as posing special hazards is planned and authorized as described in the PUB-3000, Chapter 6 and ESD ISM plan.

ESD draws upon the expertise of ESD PIs, LLPIs and staff to identify and analyze hazards of new laboratory experiments and off-site field projects. All new lab work is discussed with the LLPI and analyzed before work to determine the work authorization(s) required. The hazards for new off-site work are analyzed in the OSSEPP. The ESD safety coordinator reviews all AHDs and requests additional EHS Division SME reviewers, comments are resolved before the AHD is electronically approved. The ESD director reviews and approves all AHDs.

Work requiring a formal authorization, such as a Radiological Work Authorization, Sealed Source Authorization, or other ES&H permits or authorizations are not performed until the required authorization is obtained as described in PUB-3000, Chapter 6. Work authorizations may specify training requirements for authorized personnel. The training records of authorized personnel are reviewed for completion of required EH&S courses prior to approval, modification, or renewal of formal work authorizations. The PI designated by the work authorization is responsible for ensuring that authorized personnel has the appropriate training, including on-the-job training before performing the work. The work must be performed in accordance with the authorization.

The active, formal authorizations (AHD, RWA, LAS, BUA, BUN, OSSEPPs etc.) are listed in the quarterly ESD safety reports that are provided to the ESD management and safety committee. The authorizations are reviewed annually, and maintained on electronically controlled EHS databases or by EHS personnel (e.g. RWAs, LAS, SSAs) etc.

The ESD Safety Coordinator maintains a list of ESD "hazardous" equipment (<http://www-esd.lbl.gov/ESDEHS/index.html>, "*Hazardous Equipment Requirements*") which was incorporated into Hazard Management System (HMS) database during the HSS audit preparation. Hazardous equipment that contain more than one form of energy were also identified as potentially needing log out/tag out procedures when serviced.

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In November 2008, the HMS administrator held a training sessions for the ESD LLPIs and lab contacts on how to access and update the HMS database. As part of the HHS audit preparation, the LLPIs were required to update the HMS for their labs. Some of LLPIs also maintain a list of all lab hazards in their lab primer.

The safety coordinator quarterly reviews the Chemical Management system (CMS) Database. In preparing for the FY09 self-assessment, the safety coordinator downloaded from CMS a list of chemicals per owner and forwarded to the individual owners for review and update. During the HSS audit preparation all LLPIs evaluated their chemicals and requisitioned the ones they did no longer use.

Additionally, LLPIs request the CMS personnel to check their chemicals and help them identify inconsistencies in their lab chemical inventory. On November 2008, the CMS staff scanned and reconciled the chemical inventory in ESD labs: 70A-4458, 70A-4405, 70A-4403 and 70-279, and on September 2009 the CMS staff scanned the chemicals in lab 70A-4429. The CMS personnel continuously monitor the employment status of chemical owners and notify the supervisor and safety coordinator when an employee resigned or retired.

The ESD Department Head checklist includes HMS and CMS updates as items to be reviewed during the department heads' walkthroughs

http://esd.lbl.gov/FILES/RESOURCES/HEALTH&SAFETY/ESD_inspection_checklist_R4.pdf

On February 2009, a noteworthy practice was identified by a DOE/BSO representative performing a walk through in building 70A (Issue#: ISS-KUZ-2/12/2009-37767):

“A noteworthy practice was also observed for Earth Sciences (ESD) laboratories located in Building 70A. Every single ESD laboratory that was walked by had a completed compressed gas inventory sheet.”

4-2 Did we review our work activities to identify, analyze, and categorize hazards consistent with Lab policy?

As mentioned above, the following processes are discussed in the ESD ISM and are used to review work activities and identify, analyze, and categorize hazards:

- (i) A Project/Facility Safety Review Questionnaire (SRQ) <http://esd.lbl.gov/files/RESOURCES/HEALTH&SAFETY/pfsrq.pdf> is completed by the PI as part of the proposal initiation form of every proposed project. The SRQ is reviewed by the ESD safety coordinator, and referred to EHS SMEs, as appropriate.
- (ii) Every PI prepares a site-specific OSSEPP before conducting offsite fieldwork (<http://esd.lbl.gov/resources/health&safety/ossepp.html>). The OSSEPP identifies hazards and defines measures to reduce risks. The OSSEPP is reviewed by the ESD safety coordinator, who evaluates if the participating staff have the required training, notifies the supervisors and PIs when additional training is needed and asks EHS SMEs to review the document, as appropriate. The OSSEPP is read and signed by all staff participating in the field project before the work begins. The OSSEPPs are reviewed annually and revised when there is significant change on the work scope and hazards.

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- (iii) Every ESD lab has one designated LLPI who is responsible for overseeing safety and health issues in the specific lab (<http://esd.lbl.gov/resources/health&safety/labsafety.html>). Any new work to be performed in a given lab must be discussed with the LLPI to identify hazards, and anyone working in a lab must meet with the LLPI before work commences. The ESD LLPI is required to review and update the HMS and CMS databases (an ESD Inspection Checklist item) and review the door signs identifying hazards has been included as an item in the ESD Inspection Checklist http://esd.lbl.gov/FILES/RESOURCES/HEALTH&SAFETY/ESD_inspection_checklist_R4.pdf).
- (iv) The ESD staff and safety coordinator contact the EHS Liaison and respective SMEs for guidance on new work and hazard evaluation. During the review of formal authorizations (AHDs) the safety coordinator request additional reviews by the EHS SME, as appropriate.

Additionally, the ESD safety coordinator is inviting the EHS SMEs to the safety committee meetings to discuss new or updated PUB 3000 requirements and other institutional requirements (i.e., SJHA, LOTO, electrical equipment survey, subcontractors electrical work authorizations, pressure system requirements).

4-3 Do we have a specific hazards review process described in our ISM plan? If so, did we follow this process?

All ESD processes described above are well established and they are discussed in the ESD ISM. The PIs and LLPs are responsible for considering the ES&H hazards, risks, and concerns during the work planning process and for determining appropriate controls prior to authorizing work. The Department Heads participate in the bi-annual walkthroughs and discuss hazards with the staff. Also the Department Heads participate in the safety committee where new activity hazards may be identified and discussed.

Electrical hazards have been identified institutionally as an important hazard. The EHS SME was invited to the safety committee (March 2009) to help clarify the subcontractors' electrical work, LOTO, and energized electrical work permit requirements. Additionally, ESD completed the surveying all onsite electrical equipment that were developed to meet experimental conditions or modified from their original applications or purchased and had not been approved by NRTL.

The ES&H liaison also conducts "Hazard Assessment Survey Reports" when a new, or elevated risk, hazard is identified. In FY09 the following Hazard Assessment Surveys were conducted:

- On 12/10/08, EHS Industrial Hygiene personnel conducted a silica exposure monitoring survey (Survey ID: SID-2311) in the ESD lab 70-141 and identified no elevated exposure to respirable dust or silica and the employee was found to be well protected. No additional actions were identified.
- On 12/15/08, ESD ES&H Liaison performed a sound level survey (Survey ID: SID-2311) in the ESD machine shop located in Bldg. 64, room 161, and recommended that employees

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using the some of the equipment should enroll in LBNL's Hearing Conservation Program. The LLPI was contacted and identified the affected staff.

4-4 How do we ensure our inventory is comprehensive (i.e. did we include all of our workspaces)?

ESD evaluates and ensures that all workspaces are reviewed in the Division Director's annual walkthrough and the Department Head bi-annual walkthroughs. Each ESD lab is inspected monthly by the respective LLPI. Off-site work sites and work on the UC campus are not inspected during walkthroughs; these sites are operated under the site specific EH&S programs.

5. Division participates in pollution prevention, energy conservation, recycling, and waste minimization programs, as appropriate for the environmental impact of their activities.

5-1 Complete the Environmental Review Checklist (Attachment 1), or similar process.

Waste minimization and resource conservation, including reducing the use of paper, using recycled materials and minimizing waste generation is required by the ESD ISM. Staff are encourage to turn off their equipment and computers/monitors when not in use, turn off screen savers; when they are on, the computer is on and purchase energy efficient equipment (Energy Star rated) whenever possible. This is also discussed in the ESD New Employee Orientation.

The re-designed ESD web lists the step by step process for salvaging universal waste in Bldg. 70 and 70A (<http://esd.lbl.gov/resources/health&safety/universalwaste.html>). In FY09 Bldg. 90 was also included in the free universal waste pick up service. Before a major divisional walkthrough, the personnel are reminded to salvage old equipment. Information about salvaging old or excess equipment is disseminated through level-1 emails. Requirements to reuse, salvage and properly dispose e-waste was developed and posted in the ESD web and summarized on the one page ESD_Salvage_&_E-waste_@agance that is posted in the Division office and the ESD web (http://esd.lbl.gov/files/RESOURCES/HEALTH&SAFETY/ata glance_salvage.pdf).

Additionally, ESD continued the previous years' efforts to educate and remind staff of simple ways to recycle and conserve by posting the (i) "Waste management posters", (ii) ESD developed "Conserve Energy-Turn off the lights" signs posted high traffic areas [(e.g., conference room 90-1108, hallways (e.g., in front of 90-1165) and labs (e.g., 70-158)] light switches and (iii) posting all printers with the FY09 EHS Division EMS sticker.



In May 2009, the ESD safety coordinator and staff in Bldg. 90 inquired about the status the new pilot program to recycle the cafeteria lunch take out boxes. Even though Bldg 90 was included in the pilot program, no recycling containers were provided. ESD requested that the program is advertised to increase awareness and participation of Bldg. 90 occupants take credit for waste minimization. The Bldg. Manager stated that additional recycling containers (adding to garbage, bottle, paper, battery, CD and e-disc containers) may clutter the hallways and building entrances and requested additional time to access the most effective way to implement the pilot program. In the mean time, a number of ESD staff initiated their own pilot recycling program and started accumulating cafeteria lunch take out boxes in a box. The safety coordinator's concerns of an open overflowing container that may attract insects and mice ended this effort.

The ESD lab staff are also making serious efforts to evaluate their processes and recycle/reuse material in an effort to minimize waste. In the ESD lab 70A-2253 the staff reduce the amount of plastics used by (a) using reloading inserts for the tip boxes, which are autoclaved to be sterilize between uses, (b) recycling the plastic insert supports when finished with the refills, (c) recycling any tip boxes which cannot be reloaded or that have lost their structural integrity, (d) using reusable filtering devices whenever possible (changed over from disposable filter units to reduce plastics use), (e) using the same tube of organic solvents when performing key nucleic acid extraction steps for a second round of sample extraction, thereby halving the amount of organic solvents used for each sample (halve the amount of hazardous waste produced), and (f) using less toxic chemicals to achieve the same purpose whenever possible.

The Environmental Review Checklist was distributed to ESD technical and administrative staff in Bldg. 90.

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5-1.1 What are our opportunities for improvement?

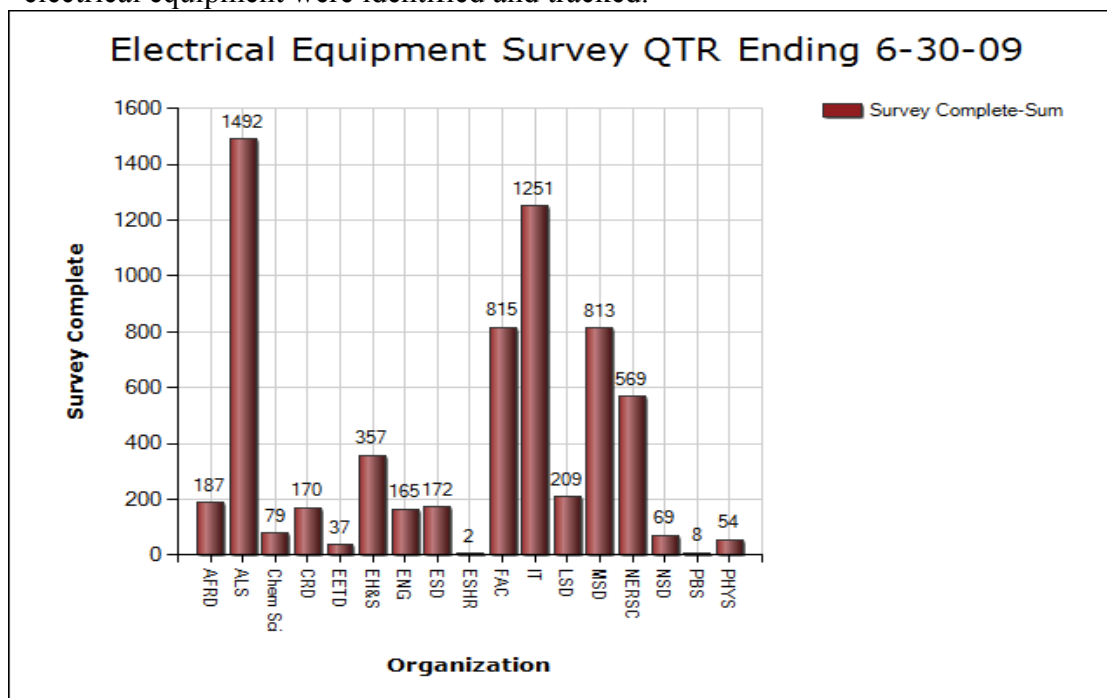
- ESD should work with Bldg. manager, facilities and EHS personnel to help implementation of the recycling of the cafeteria lunch take out boxes.
- ESD should continue its efforts in educating the staff in pollution prevention, energy conservation, recycling, and waste minimization programs both in the offices and the labs.
- ESD should continue communicating to the staff the need to be turning off their equipment when are not needed.
- The ESD LLPIs should continue evaluating the chemicals they are using and try to minimize the use of toxic and hazardous chemicals when appropriate.
- The ESD LLPIs should continue evaluating and recycling plastic items used in the lab.

6. Division, with assistance from EH&S, surveys all of its electrical equipment by September 30, 2009, as required by the LBNL Electrical Equipment Acceptance Program.

- 6-1. Have we documented our non-NRTL electrical equipment in the equipment inspection database? If not, why?

In FY09, LBNL required that Electrical equipment not certified by the Nationally Recognized Testing Laboratory (NRTL) are surveyed, tracked in a database and subsequently be inspected and approved by an equipment inspector. The first milestone was to identify, survey and include all these equipment in a database by 9/30/09. ESD LLPIs identified the lab personnel to complete the task, take the required training (EHS0381 *Electrical Equipment Surveyors Training*) and access the database. Eleven (11) ESD staff completed the training and were certified by the EHS electrical engineer to complete the survey.

The ESH electrical engineer tracks the number of equipment surveyed. The chart below indicates the equipment that was identified by June 30, 2009, by September 30, 2009 all onsite electrical equipment were identified and tracked.



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In an effort to ensure that all lab and field electrical equipment, currently stored or used onsite, are surveyed by 9/30/09, ESD utilized the EHS trained subcontractors who surveyed all equipment including field equipment stored in storage containers in the Bldg 31 parking lot. LLPIs and lab staff had direct oversight of this activity and they work with the trained subcontractors to identify all equipment. By 9/30/09 all ESD lab and field equipment that were used or stored on site were surveyed, all equipment that were not approved by NRTL were tracked through the EHS electrical equipment database.

In an effort to ensure that equipment that currently used off-site needs to also be surveyed when they are shipped back to LBNL, the safety coordinator will send quarterly reminders to PIs who conduct field work and ask them to have their equipment evaluated and surveyed, as appropriate, by the ESD trained personnel.

ISM CORE FUNCTION 3: CONTROL HAZARDS

7. Division is using appropriate and required engineering controls in performing work

7-1. Do we have a process for determining whether existing engineering and other safety/environmental controls are properly utilized and effective? If not, why?

- The ESD staff and safety coordinator contact the EHS Liaison and respective EHS SMEs for guidance on new work and hazard evaluation.
- New work activities and new hazards are evaluated by the LLPI and the appropriate ESH SMEs are contacted to assist in identifying engineering controls. As an example, the new instrument installed in lab 70A-4413 required construction of special gas cabinets and new electrical circuit that involved evaluations by the EHS Pressure systems manager and the electrical engineer.
- All newly constructed labs were visited by the ESD EH&S Liaison and evaluated before release for use. In FY09 ESD remodeled 2 new labs, 70-120 and 70A-1105.
- During the review of formal authorizations the safety coordinator request additional reviews by the EH&S SME, as appropriate.
- The ESD safety coordinator is inviting the ES&H SMEs to the safety committee meetings to discuss new PUB-3000 and other institutional requirements (i.e., Lockout/tag out requirements, Subcontractors JHA, pressure systems requirements.)
- The EHS Liaison has conducted a number of hazard assessments for on going ESD activities (i.e., high noise exposure, silica etc.) where additional controls were identified, as appropriate.
- The ESD ergo advocates and EHS Ergonomics group are supporting the ESD staff with required ergo evaluations of workstations.
- Card key reader locks were installed in lab 70-143 and 70-158 to control access to the labs.

7-2. Do we have a process that identifies opportunities for utilizing engineering and other safety/environmental controls?

The LLPI is responsible for ensuring that all activities conducted within a lab are conducted safely. The EHS SMEs are conducted to help evaluate the existing engineering controls. ESD policy always required that staff and guests entering a lab or shop use safety glasses. Since March 2009, LBNL instituted a minimum Personal Protective Equipment (PPE) policy for all staff and guests entering technical areas. ESD fully implemented the PPE policy requiring that all staff and guests entering a technical area wear safety glasses, long pants, and closed shoes. This policy is implement with no exceptions in all ESD labs. The minimum PPE are also clearly listed on the entrance placards.

7-3. Do we have a process for determining the feasibility of installing engineering and other safety/environmental controls?

- The ESD staff and safety coordinator contact the EHS Liaison and respective EHS SMEs for guidance on new work and hazard evaluation.
- The LLPI determines the processes that require additional controls based on the activity hazard level. Activity hazard documents (AHDs) are also developed per Pub 3000, Chapter 6.

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- Hazard Assessments conducted by EHS SMEs for new or elevated hazard activities.
- The emergency eyewashes & safety showers are evaluated during the monthly LLPI and the bi-annual Department Heads' walkthrough (checklist item for lab: http://esd.lbl.gov/FILES/RESOURCES/HEALTH&SAFETY/ESD_inspection_checklist_R4.pdf). As part of the walkthrough, issue identification and resolution, CATS 7599 was issued to address emergency eyewashes & safety showers overdue inspection.
- The fume hoods, biosafety cabinets, eyewash and showers etc., are periodically tested by EHS personnel.

7-4. What actions(s) did we take to resolve deficiencies in this area, as applicable?

When deficiencies are identified they are entered and tracked in CATS (CAT7599: the Lab 7A-4405 emergency eye wash /safety shower was overdue for inspection). Observations and opportunities for improvement are discussed with the LLPIs, staff and respective Department Heads.

8. Division is using appropriate and required administrative controls in performing work. Examples of administrative controls include: work authorizations (including but not limited to JHAs, AHDs, BUAs and RWAs), work permits (including but not limited to confined space, and energized electrical work), environmental regulations and permits (including recordkeeping), work procedures, and project safety reviews.

General:

8-1 Did we review formally authorized work on schedule?

- The ESD director annually reviews and approves all new or revised AHDs.
- The JHAs are reviewed annually or when the work scope changes and approved by each work lead. The JHA groups were developed for the main activities per department and main LLPIs. The group hazards and controls were defined by the LLPI for all staff working in his /her Lab or project.
- The ESD safety coordinator checks the status of all Work Authorizations quarterly. All active ESD AHDs are listed on the quarterly safety report that is provided to the ESD management (Division Council) and safety committee. The ESD safety coordinator ensures that all PIs responsible for rad. authorizations are not away from the lab on extended or medical leave.
- The ESD staff worked closely with the ES&H SME to identify equipment requiring logout/tag out procedures.
- The ES&H Liaison conducts a hazard survey for each remodeled ESD lab before it is released for use.

8-2 How did we address changes in work scope?

The JHA describes the work an employee is authorized to conduct. The JHA is revised annually or when work scope changes, new tasks are added and new controls are implemented. Changes in work scope are captured for new projects by means of the Safety Review Questionnaire (SRQ). Changes in work scope for field (offsite) projects require revision of the OSSEPP. Changes in work scope in individual labs are captured in ESD inspection checklist item L3 *“Re-evaluate work for new hazards- are there new procedures, personnel or*

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equipment? Is HMS database current? Has equipment or apparatus been modified or adapted in any way that may not be in compliance or safe? Do you need LOTO procedures for your equipment?"*

http://esd.lbl.gov/FILES/RESOURCES/HEALTH&SAFETY/ESD_inspection_checklist_R4.pdf

The checklist is completed before the management walkthroughs. All new lab work must be discussed with the LLPI before it is initiated. All the above processes are described in ESD the ISM Plan.

- 8-3 Are our processes to ensure administrative controls are in place and maintained consistent with our division ISM Plan?

All administrative controls, as discussed above, are consistent with the ESD ISM.

RPG authorizations:

- 8-4. Is the work scope accurately captured in the RPG authorization?

On September 30, 2009, ESD had the following, active RPG authorizations. None of the ESD PIs listed on the authorizations is currently on extended or medical leave.

Authorization	Class	Due Date	Status	Locations(s)
RWA 1107	II	2010/09	Renewal	070-0114, 070-131B, 072C-0171, 062-0114, 062-0145, 006-Beamline 12.3.2, 070-114A, 072C-0165, 006-Beamline 11.0.2
RWA 1125	I	2011/02	Renewal	070A-1103, 070A-4429, 070A-4429A, 070A-4429C
RWA 1154	I	2010/11	Renewal	070A-1103, 070A-1109, 070A-4459, 070A-4463
SSA 140	II	2010/01	Renewal	070-120, 070-147A
LAS L007		2010/04	Renewal	070A-4413, 070A-4431, 070A-4429C, 070A-4419, 070A-4425A
LAS L012		2010/04	Renewal	070A-4405D
LAS L014		2010/05	Renewal	070A-1107, 070A-4459, 070A-4463, 070A-4463C, 070A-4461, 070A-2253, 070A-4462
LAS L019		2010/04	Renewal	070-143A, 070-143
LAS L032		2009/12	Renewal	070-0114, 070-114A
RWA 1166	I	2009/10	Amendment	070-0210, 070-143A
LAS L028		2010/08	Amendment	006-Beamline 10.3.2, 006-Beamline 08.3.2
LAS L041		2010/05	Amendment	070-0158, 070-0120

- 8-5. Is Division line management sufficiently involved in developing and approving appropriate RPG authorizations?

ESD PIs and LLPIs are responsible for considering ES&H hazards during the work planning process and for determining appropriate controls prior to authorizing work. Work recognized as posing special hazards, including radiation work, is planned and authorized as described in the ESD ISM plan and PUB-3000, Chapter 6. ESD draws upon the expertise of ESD PIs, LLPIs and staff to identify and analyze hazards of new laboratory experiments. All new lab

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work is discussed with the LLPI, it is analyzed and the hazards are identified in order to determine the work authorization(s) required.

A SRQ (<http://esd.lbl.gov/files/RESOURCES/HEALTH&SAFETY/pfsrq.pdf>) is completed by the PI as part of the proposal initiation form of every proposed project. The SRQ is reviewed by the ESD safety coordinator, and referred to EHS SMEs, as appropriate. All ESD rad work is discussed with the RPG and new work is not initiated without a formal approved RPG authorization. The ESD director reviews and approves all RWAs.

In FY09, the LLPIs identified all ESD x-ray emitting devices (including devices that were out of service but still LBNL property). The RPG requested and was provided a comprehensive list of (i) all ESD devices that have an issued formal LBNL authorizations (e.g. AHD, RWA) and (ii) devices that are not necessarily issued a formal LBNL work authorization, but are managed under local line management control (i.e., ion sources, electron microscopes and some types of x-ray emitting devices, etc). All reviewed equipment had the appropriate authorizations and no corrective actions were required.

- 8-6. Does the authorization lead possess line management authority over workers listed on the authorization?

The project PI or LLPI are the line managers authorizing employees to work in their projects and have the responsibility and authority over the staff working in their projects. The PIs and LLPIs roles and responsibilities are clearly defined in the ESD ISM and communicated to the staff at the New Employee Orientation.

AHDs and BUAs:

- 8-7. Is work reviewed to determine if an AHD or BUA is needed?

As noted above, ESD PIs and LLPIs are responsible for considering ES&H hazards during the work planning process and for determining appropriate controls prior to authorizing work. Work recognized as posing special hazards is planned and authorized as described in the PUB 3000, Chapter 6 and ESD ISM plan. ESD draws upon the expertise of ESD PIs, LLPIs and staff to identify and analyze hazards of new laboratory experiments. All new lab work is discussed with the LLPI and analyzed before work to determine the work authorization(s) required.

A SRQ is completed by the PI as part of the proposal initiation form of every proposed project and reviewed by the ESD safety coordinator. The EHS Liaison and EHS SMEs are contacted to help evaluate hazards and identify appropriate authorizations.

On September 30, 2009, ESD had the following, active AHDs and BUAs. All are reviewed by the EHS subject matter experts annually. The AHDs are reviewed and approved by the ESD Director.

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AHD No	Version	Title	Status	Primary Hazard	Expiration Date
3429	1	Supercritical CO2 Flood, Chemistry and Particles	Active	Pressure - Pressure > 150 psi or large volume	3/2/10
3399	2	Dynamic Light Scattering System	Active	Lasers	7/21/10
2046	5	Gas Hydrates Experiment	Active	Compressed Gas - Flammable, Oxidizer	6/26/10
3495	1	Acoustic Resonant Bar Experiment	Active	Pressure - Pressure > 150 psi or large volume	7/27/10
3512	1	UXO Detectors Operation and Maintenance	Active	Electrical - High Voltage / High Energy	10/7/10
3256	3	Ammonia feed for ICP-MS Dynamic Reaction Cell	Active	Compressed Gas - Flammable, Oxidizer	5/11/10
3504	1	Isotope Ratio Mass Spectrometer 70A-4413	Active	Compressed Gas - Pyrophoric, Reactive, Health Hazard, Flammable, Oxidizer	8/11/10

Auth Type	Auth Number	Title	Status	Autorization Date
BUA	144	DNA Sequencing and Hybridization	Active	4/14/09 0:00
BUA	179	Applied Environmental Microbiology Core	Active	4/15/09 0:00
BUA	200	Characterizing the Forms and Fate of Organic Carbon	Active	5/1/09 0:00
BUA	211	Molecular microbial ecology of soil, sediment and human material	Active	4/3/09 0:00
BUA	53	Development of Synchrotron Infrared Spectromicroscopy of Live Cells for Biological and Environmental Research Applications	Active	11/24/08 0:00
BUN	182	Fuel Synthesis Research for JBEI	Active	1/13/09 0:00
BUN	119	Use of a Method for Simultaneous Analysis of d18O and d15N of Nitrates Using the Natural Bacterial Strain Pseudomonas chlororaphis	Active	11/20/07 0:00
BUN	198	Investigation of Microbial Calcite Precipitation	Active	9/16/08 0:00
BUN	154	Microbial interaction with Fe and Mn minerals	Active	11/13/06 0:00

8-8. Are hazards and controls adequately described in AHDs or BUA?

In addition the PI and the safety coordinator, the AHDs are reviewed and signed off by the EHS Liaison, who calls in the SMEs when questions arise.

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8-9. Is work conducted only after AHDs and BUAs are approved by the Division?

New work is discussed with the LLPIs, work is also reviewed during the Department Heads' bi-annual walkthroughs. All high hazard work is identified and appropriate controls implemented before work begins.

9. Division controls ergonomic hazards (computer, laboratory, and material handling). Employees and line management are knowledgeable and engaged in this process, including the early reporting of ergonomic pain or discomfort (before an injury). Ergonomic issues/concerns/discomfort/pain are managed effectively.

9-1 Did we implement ergonomic safety policies and procedures as described in our ISM Plan?

It is the ESD policy that any ESD employee or guest can request an ergo evaluation. All employees have an evaluation when they begin work in ESD, following a move, or at the first sign of discomfort, regardless of whether or not they meet the 4 hour/day of computer work threshold used in the JHA. The ESD ISM Plan requires that all ESD staff, including guests, who perform computer-intensive work for more than 4 hours per day should complete the EHS059 *Ergo Self-assessment for Computer Users*, and within a year, the EHS058 *Ergo Self-assessment Refresher*.

ESD developed JHA groups with the main task intensive computer work (e.g., Modeling Group For Reaction-Transport and Coupled Processes in Geological Systems; ESD Climate Department Modeling; ESD Geochemistry Water-Rock Interaction Modeling; ESD Geophysics Department Modeling MASTER; ESD Hydrogeology Department Modeling MASTER, etc.). These group JHAs require all staff, participating in the group, take EHS059/EHS058. Additionally, any staff who experience ergonomic discomfort should discuss it with their supervisor and request an ERGO evaluation. The ergo advocates monitor staff that do not experience any discomfort. The employees' ergonomic set up is also discussed during the Division Director and Department Heads walkthroughs.

For new projects, the Safety Review Questionnaire (SRQ) is used to identify ERGO support and furnishings. The Division funds ergonomic furniture, when project funds are lacking.

Multiple channels are used to communicate the ESD ergonomic program and policy, including the ESD Town Hall Meetings, the New ESD Employee Orientation, and the ESD ES&H website (<http://esd.lbl.gov/resources/health&safety/ergonomics.html>). The ESD ES&H website describes the ESD ergonomic program and posts information from various sources – IT, EHS (including the EHS 1 minute 4 safety slides describing awkward positions, workload issues, guidelines for supervisors to check for early symptoms, and reminders to employees to report early signs). The website also includes ergonomic guidelines for laboratory and fieldwork.

9-1a. What new policies and procedures (eg., advising all employees who use a computer on a regular basis to download RSIGuard) have been put in place this FY?

In FY09, three (3) ESD Ergo Advocates were trained and authorized to perform preventive ergonomic evaluations. The safety coordinator (one of the ergo advocates) oversees implementation of the ESD ergonomic program. Administrative staff, and staff

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working on the computers for most of their work day are encouraged to install RSIGuard software on their computer. This has received mixed reviews, some staff find the RSIGuard break reminders useful, while others are annoyed by the popup window, even though the RSIGuard setting can be adjusted to accommodate different intervals.

In addition to the RSIGuard, voice activated software is used for high employees, as requested by the EHS Ergonomist.

9-2. How do we communicate the importance of early reporting of discomfort and workload management as strategies for preventing ergonomic injuries?

Continuous communication among the ESD supervisors, safety coordinator and the employees helps employees identify and discuss early discomfort. The ESD website (<http://esd.lbl.gov/resources/health&safety/ergonomics.html>) has a very detailed presentation of (i) Ergo Injury Symptoms (ii) Early Intervention to preventing long-term injuries for both employees and supervisors, (iii) ergo advocates, (iv) Ergo Tools & Guidelines.

Early reporting of discomfort is discussed in the ESD New employee Orientation. The workload management is discussed between work leads, and/or supervisors, and staff.

9-2a. Are Division-specific ergonomics issues (computer, laboratory, and material handling/tool use) included on the Division's website?

The ESD website (<http://esd.lbl.gov/resources/health&safety/ergonomics.html>) has a very detailed presentation of Ergo Tools & Guidelines including (i) Remedy Interactive RSIGuard, (ii) Keyboard Shortcuts to reduce mouse usage, (iii) Ergonomic Tools for Field Work, (iv) Ergonomic Guidelines for Labs, and (v) an Ergonomics Guide to Pipette Selection & Use.

9-2b. Are One Minute for Safety slides used by supervisors and others in training?

One Minute for Safety slides have been used to present information in all hands Town hall meetings, ESD safety committee meetings, and the ESD New employee Orientation. Additionally, ESD developed a detailed web and training tools to meet the staff needs.

9-2c. Are links to One Minute for Safety slides provided on the Division's website and in group e-mails?

One Minute for Safety slides have been used to present information in all hands Town hall meetings, ESD safety committee meetings, the ESD New employee Orientation, and are posted on the ESD website. They are not consistently used in group emails because ESD has redesigned its website and also uses the one page ESD@aglace summary documents (<http://esd.lbl.gov/resources/health&safety/docs.html>) to address Health&Safety, ISM, JHA, SJHA, Line Management, etc. and they are posted in offices and labs and detail the processes ESD is using to meet the ISM requirements.

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9-3. What is our completion rate for required ergonomics training? (accessible through the JHA site)

On September 30, 2009, 176 ESD staff and guests completed EHS059 and or refresher course EHS058 as required by the JHA for all employees who mainly work in an office or who spend on average 4 hours per day working on a computer and ergonomics is the main hazard of their activity. Two (2) ESD employees who were required to take EHS059 had not taken the training, both were new employees hired in August 2009 and eight (8) had not completed the refresher course EHS058.

9-4. How timely are our ergonomic evaluations?

Every effort has been made to complete the ergonomic evaluations within 30 days. Delays in ergo completion may occur when the employee is testing and evaluating new ergonomic equipment or when there are delays in delivery of newly purchased equipment.

9-5. Review of Ergo Advocate Program

9-5a. Number of active Ergo Advocates

In FY09 ESD trained 3 staff as ergo advocates.

9-5b. Number of evals performed by Division Ergo Advocates (preventive evals of new hires, moves, etc.)

In FY09 twenty (21) low risk ergonomic evaluations were assigned to ESD ergo advocates (15 ergo evaluations assigned; 4 ergo evaluations were completed; 1 ergo evaluation was in progress; and 1 ergo evaluation was cancelled). The ergo advocates are working closely with the EHS ergonomists to and have made great effort to address the staff's ergo needs. In an effort to continuously improve and to ensure that the ergo advocates are proficient and able to perform effective ergo evaluations, all three will attend the refresher training (2 half day long sessions) offered in November 2009 by the EHS ergonomics group.

9-6. Did our division participate in the Ergo Advocate Program?

9-6a. Did Ergo Advocates attend update sessions (1 live, 1 webinar) re: Remedy Interactive and New Ergo Database Administrative and Reporting Tools?

The safety coordinator completed the update sessions (1 live, 1 webinar) re: Remedy Interactive and New Ergo Database Administrative and Reporting Tools. All three ergo advocates completed the New Ergo Database Administrative and Reporting Tools.

9-6b. What were the results of our participation?

Participation in the training, enhanced the ESD ergo advocates understanding of the ergonomic practices and tools and also draw of the EHS ergonomist experience for advice when issues arise.

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9-6c. Do the Ergo Advocates use any of the Administrative and Reporting Tools in the Remedy Interactive and Ergo databases for Safety Committee meetings or for tracking purposes?

The safety coordinator quarterly monitors the Remedy database and reports the results in the quarterly safety report. On 10/13/09 only one ESD employee was listed in high risk and will be closely monitored and evaluated by both the EHS ergonomist and the ESD safety coordinator.

9-7. Review ergonomics database.

9-7a. Recent ergo evals by Reason for Eval: Discomfort vs. Preventive and by Status: In Progress vs. Completed)

In FY09, seventy one (71) ergonomic evaluations were initiated (38 were completed, 8 were canceled; 5 have open actions pending; 3 are in progress and 16 are assigned but not conducted by 9/30/09) under the following categories:

- “discomfort” - 32 ergonomic evaluations (19 completed; 4 actions pending; 2 in progress, 2 cancelled, 1 to be followed up; and 1 assigned but not performed by 9/30/09);
- “high risk –self assessment (remedy)” - 4 ergo evaluations were initiated for staff identified as “high risk” in the Remedy database (all high risk ergo evaluations have been completed);
- “new equipment” - 2 ergo evaluations (1 completed; 1 assigned);
- “new employee” - 13 ergo evaluations (8 completed; 1 actions pending; 1 in progress; 3 assigned; 1 cancelled)
- “physical move” - 9 ergo evaluations (2 completed ; 4 assigned; 3 cancelled); and
- “preventative evaluations” – 11 ergo evaluations (4 completed; 7 assigned; 1 in progress).

9-7b. Did we complete ergonomic corrective actions, per the database?

Ergonomic corrective actions are entered and tracked in the New Ergo Database, periodic reminder email notifications, with the pending ergo corrective actions, are sent to the employee, safety coordinators and ergo advocates. All actions are completed as required by the evaluation. The safety coordinator also follows up with the employees and supervisors in order to timely complete open ergo evaluations.

9-7c. How timely is implementation of corrective actions, per the database?

Every effort has been made to complete the ergonomic evaluations within 30 days. Delays in ergo completion may occur when the employee is evaluating new ergonomic equipment. The safety coordinator closely monitors the ergo evaluations that are open for more than 6 months and meet with the employee and the supervisor to access the pending issues. The safety coordinator also monitors the Remedy emails requesting employees to update their profile.

ISM CORE FUNCTION 4: PERFORM WORK

10. Division performs work safely within ES&H conditions and requirements specified by Lab policies and procedures. Performance criteria include work authorizations (including but not limited to JHAs, AHDs, BUAs, RWAs); work permits (including but not limited to confined space, energized electrical work); waste management criteria (SAAs, waste sampling, NCARs); and environmental permits and management criteria (resource conservation, pollution prevention, and waste minimization).

- 10-1. Do we effectively document specific authorization to perform LOTO after employees have completed the basic LOTO training class?

In October 2008, ESD implemented the loto program as required by LBNL. In preparing for loto implementation, the ESD safety coordinator:

- Invited the EHS Electrical Engineer to the ESD Safety Committee meeting on 6/11/08 discuss the Electrical Safety and LOTO.
- Reviewed the JHA and training databases in order to identify the ESD personnel who may perform tasks requiring LOTO implementation.
- Communicated the Electrical Safety and LOTO Safety Program requirements to the ESD personnel working in laboratories, the machine shop and the field, who may be exposed to hazardous energy and may be required to use LOTO procedures. (Email from the ESD safety Coordinator to all ESD lab-space Principal Investigators, entitled “*LOCKOUT/TAGOUT of ESD equipment_PLS RESPOND!*” dated 9/26/08.)
- Communicated the LOTO Program requirements to all ESD personnel at the ESD Town Hall meeting on 10/21/08.
- Requested the EHS SME to visit the ESD Machine Shop in Building 64 and evaluate the need for LOTO controls and procedures. A single LOTO lock controls all equipment in the ESD Machine Shop and no additional procedures are required. The ESD machine shop manager returned his LOTO lock key at the time of retirement from the Engineering Division and he is required to take the LOTO training for his ESD position.
- Requested the EHS Electrical Engineer, to meet with a number of ESD PIs, discuss the requirements with them and identify any equipment that may require LOTO procedures.
- An ESD PI requested additional information from the subcontractor servicing his equipment on any formal LOTO procedures needed and he is discussing with EHS Electrical Engineer the appropriate steps to ensure that any required LOTO procedures are in place prior to any servicing of the equipment.
- Additionally, ten (10) ESD employees completed the EHS0357 *Loto Lessons Learned*, offered in FY09

In FY09, ESD staff performed loto for only one instrument the ICPMs in lab 70-143. Three Loto porcedures were written and the EHS SME staff reviewed the procedures and observed the employees performing loto (In August 2009, the EHS SME observed the loto process in lab 70-143).

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- 10-2. Do we effectively document specific authorization to perform any electrical work such as testing, that is done with exposed electrically hazardous parts?

In FY09, three (3) electrical AHDs were initiated, with one been finalized. One ESD employee is in the process of been authorized to perform electrical work and document it in an AHD. No Subcontractors' work required electrical permits and loto authorizations.

- 10-3. Is work reviewed to ensure that the scope and hazards have not changed, prior to internal AHD and BUA reauthorization?

- At the time of the proposal submittal, the PI identifies the main hazards of the proposed work in the SRQ, which is reviewed by the safety coordinator and evaluated periodically.
- All work authorizations undergo periodic review, by the PI and designated signature authorities per the schedule prescribed by the authorization program.
- Identification of new work and hazards is an item on ESD's Inspection Checklist, used during the bi-annual Department Head's walkthrough and monthly LLPI's walk through (http://esd.lbl.gov/FILES/RESOURCES/HEALTH&SAFETY/ESD_inspection_checklist_R4.pdf).

- 10-4. Have personnel completed necessary training prescribed by the AHD or BUA?

All training is completed before the safety coordinator approves the AHD or BUA.

- 10-5. Review environmental permits and identify ones applicable to our activities (ESG to provide listing by division). Review the requirements of applicable permits and determine if we are meeting them. Environmental permits are available at:
<http://www.lbl.gov/ehs/esg/Permit%20for%20Table/operatingpermitstable.html>

None of the environmental permits listed on the above website are required for ESD work activities.

- 10-6. How often do we (the Division) review SAAs?

ESD inspects the Waste Management Satellite Accumulation Areas (SAA) (a) during the Department Heads' bi-annual safety walkthroughs, and (b) during the monthly LLPIs lab inspection. The SAA review is included in the walkthrough checklist: Item L10: *SAAs: area & guidelines posted, contact info current & guidelines followed. ESD requires requisition with 6month of initial accumulation.*
(http://esd.lbl.gov/FILES/RESOURCES/HEALTH&SAFETY/ESD_inspection_checklist_R4.pdf)

In addition to the ESD, the Waste Management group conducts quarterly SAA inspections (11/11/2008, 1/22/09, 4/2/09, and 8/11/09). The Waste Management Generator Assistant (H. Hansen), the ESD safety coordinator, and the DOE/BSO representative participate in the lab SAA inspections. The Waste Management Team Lead participated on the April assessment. The main issue identified during the SAA inspections was incomplete information on the waste label; all deficiencies were corrected on the spot. The results of each inspection were detailed in an email to the ESD Director, LLPIs and lab contacts and presented in the safety

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committee meetings.

- The Waste Management Team Lead documented the April 2009 SAA inspection results in an email to the ESD Director stating:

“ ...Of the 27 waste storage areas inspected (SAAs, Red Waste, and Mixed Waste), 6 SAAs had issues with signs, labels and containment. This resulted in a decrease in your compliance rate from 93% last year to 81% this year. All the issues were discussed in detail with Vivi Fissekidou and corrected on the spot or shortly thereafter.

On a positive note, the waste area managers listed above had all their waste areas in 100% compliance! I recognize that managers with multiple waste storage areas might not be included in the list above but this is because one of their areas had an issue where the others did not. However, I appreciate efforts by all ESD staff and matrix personnel in keeping their waste areas in 100% compliance. Their efforts help keep the lab from potential fines and additional effort from my staff.”

- The SAA inspections were documented by the DOE/BSO representative as follows:

- On 2/4/200, WALK-AKQ-2/4/2009-26285:

“Attended by Vivi Fissekidou and Howard Hansen from LBNL Inspected fourteen SAAs, nine had containers in them and five were empty. No SAA violations were found.”

- On 4/2/09, Walkthrough #WALK-AKQ-4/3/2009-96391):

“Attended by Nancy Rothermich, Howard Hansen, and Vivi Fissekidou from LBNL. 20 SAAs were inspected, 14 were acceptable, two were empty, four contained containers that needed label corrections. Two MW SAA were inspected one was empty and the other was acceptable. During the walk through I observed that all lab workers I saw were wearing gloves, safety glasses, and lab coats. I also verified the accuracy of the gas cylinder inventories in five of the labs and found them accurate. In room 70A 2253 I pointed out to Vivi that there was a clear bag biohazardous waste that was not in a biohazardous waste container. The PI was going to properly dispose of the waste.”

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10-6a. What are the most prevalent issues found in the SAAs?

The most prevalent issue is that the Red & White Hazardous Waste Label is not filled out properly. Issues may include: (a) start date written on the wrong field or missing year; (b) listing the chemical formula instead of the chemical name; (c) not identifying the chemical phase or (d) the hazard type. These corrections are made prior to requisition.

10-6b. How will these issues be prevented in the future?

- The safety coordinator emails the results of the SAA inspections to all LLPIs and lab contacts and lists all issues identified during the SAA walkthroughs.
- The new online EHS602 training course emphasizes filling correctly the waste labels.
- Continuous oversight by the SAA manager and training of all new staff generating hazardous waste.

10-6c. Are all the SAA managers aware of their responsibilities?

It is the ESD ISM policy and it is listed in the ESD IMS plan that :

- The SAA Custodian is responsible for ensuring that all waste added to the SAA is accurately labeled, characterized and picked up in a timely fashion (no more than six months following the start of waste accumulation).
- The LLPI is responsible for (i) knowing about the existence of SAAs in their lab space, (ii) ensuring that the SAA is in compliance with EHS Division Waste Management requirements and (iii) evaluating compliance during the monthly LLPI walkthrough.
- No ESD employee shall establish, or add wastes to, a SAA (i) without having the required training and (ii) without the knowledge and approval of the SAA Custodian.
 - Waste Generator Training: On December 16, 2008, ESD received a "Waste Generator Training" memo indicating that a Waste Generator had not complete EHS0622- training prior to requesting waste pick up. The training was completed on January 28, 2009 and a new requisition form for the waste pick up was submitted. Documented in CATS 6599
- Stop work- acid waste generation:

In FY09, the LBNL interim Director stopped all laboratory operations generating strong acid wastes. He requested that these processes be evaluated to ensure that incompatible waste materials are kept separate. LBNL experienced two incidents where mixing of strong acids with materials that react vigorously with acids has caused over pressurization and violent rupture of the waste containers. The Division Directors were instructed to immediately cease operations that generate strong acid wastes and conduct a review to ensure that:

1. Incompatible waste materials are kept separate
2. Procedures and practices are in place to prevent the mixing of such materials
3. Personnel performing these operations are aware of and familiar with the approved procedures and practices.

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ESD evaluation and response:

ESD labs are located in Bldgs. 64, 51F, 14, 70, and 70A. The ESD LLPIs reviewed the stop work order and responded as follows:

- A. For the laboratory work conducted in Bldgs. 64, 51F, and 14, the ESD LLPIs responded that their work does not generate strong acid waste.
- B. For the laboratory work conducted in Bldg. 70 the ESD LLPIs responded that they use one of the following methods:
 - They use approved procedures to neutralize the acid waste (labs 70-143; 70-114; 70-279);
 - They segregate waste containers according the CHSP guidelines in secondary containment (labs 70-158; 70-131); or
 - They do not generate strong acid waste (labs 70-141; 70-166)
- C. For the laboratory work conducted in Bldg. 70A the ESD LLPIs responded that they use one of the following methods:
 - They use approved procedures to neutralize the acid waste (labs 70A-4403) (these procedures are reviewed and approved by the EHS Waste Management);
 - They segregate waste containers according the CHSP guidelines in secondary containment (labs 70A-1109; 70A-4459; 70A-4461; 70A-4463);
 - They dispose all acid waste through the waste Fixed Treatment Unit (FTU) (labs 70A-4413; 70A-4419; 70A-4429; 70A-4429); or
 - They do not generate strong acid waste (labs 70A-2245; 70A-2253; 70A-2275).

All ESD work generating acid waste was reviewed, evaluated and it was concluded that it is conducted under approved procedures and/or line management control.

10-7. What is our rate of accurate characterization of waste?

On September 30, 2009, ESD had a 98% compliance rate, with two tested hazardous waste samples having incorrectly identifying the constituents and concentrations on the requisitions form. The issued exceptions reports did not result in any NCARS.

The two QA Exception Reports were discussed with the respective waste generators and LLPIs. The Division Director and Department Head were also notified. The QA Exception Reports were listed in the ESD quarterly safety report distributed to the ESD management and safety committee members and were reviewed and discussed at a safety committee meeting.

- (i) QA Log# E174; Sample IDs: S30096, 30097; Date: 2/18/09- Lab 70A-4431: Analysis detected hazardous constituents inconsistent with the reported waste. Root Cause: Analytes could be from rock samples reaction vessels and apparatus attacked by BrF₅. Corrective action: the BrF₅ system has been taken out of service and disposed - no further action is required. Upon discussion with the ESD Waste Management Generator Assistant no further actions were required.
- (ii) QA Log# E171; Sample ID: S29944, Date: 3/2/09 – Lab 70-158: Analysis detected hazardous constituents inconsistent with the reported waste. Root Cause: Insufficient/inaccurate process knowledge- Generator could not account for mercury in samples. Corrective action: Be aware of possible process contamination and use

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reagent-grade chemicals. Upon discussion with the ESD Waste Management Generator Assistant no further actions were required.

The waste management submits reports to the divisions listing the waste QA testing results. This information is communicated to all ESD LLPIs and management. The waste management QA report from 10/1/08-9/30/09 indicates that ESD had a 98% compliance rate.

QA Performance 10/1/08 to 9/30/09

Division	#containers received	% total containers received	# containers to be tested	sampling rate (%)	# Pass results*	# Fail results*	% pass**	# tests performed	tests per container	normalized %pass***
AFRD	213	3.27%	21	9.86%	22	0	100.00%	23	1.05	100.00%
ALS	458	7.04%	53	11.57%	46	0	100.00%	47	1.02	100.00%
Chem Sci	403	6.19%	49	12.16%	48	0	100.00%	53	1.10	100.00%
Comp Sci	4	0.06%	0					0		
ESD	834	12.81%	103	12.35%	107	2	98.17%	120	1.10	98.33%
ENG	281	4.32%	30	10.68%	27	0	100.00%	28	1.04	100.00%
EHS	243	3.73%	34	13.99%	45	0	100.00%	63	1.40	100.00%
EETD	496	7.62%	46	9.27%	39	3	92.86%	42	1.00	92.86%
FAC	231	3.55%	15	6.49%	16	0	100.00%	16	1.00	100.00%
Genomics****	133	1.00%	14	10.53%	12	0	100.00%	12	1.00	100.00%
LSD*****	639	9.82%	73	11.42%	77	4	95.06%	95	1.17	95.79%
MSD	1854	28.48%	194	10.46%	177	14	92.67%	198	1.04	92.53%
NSD	377	5.79%	52	13.79%	53	0	100.00%	53	1.00	100.00%
PBD****	178	2.73%	21	11.80%	19	1	95.00%	21	1.05	95.24%
Physics	166	2.55%	17	10.24%	21	0	100.00%	22	1.05	100.00%
LBL AVG	6510	100.00%	722	11.09%	709	24	96.73%	793	1.08	96.97%

* - Pass/Fail statistics are based on number of results evaluated and does not reflect the same population as the containers received

% Pass = # pass results / # results evaluated

** Normalized % pass = (# tests performed - # fail) / # tests performed

*** - Does not include off-site facilities (Potter St, JBEI or JGI)

QA Program Self Assessment Criteria

100% - 95% or no more than 1 failure where there are less than or equal to 20 containers analyzed= green

94.9% - 92% = yellow

<92% = red

NCARs

EHS

LSD

MSD

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10-7a. Are there any commonalities amongst the failures?

Both QA exception reports resulted for not identifying all waste constituents in the waste requisition; however, during the investigation the identified reasons were different. One resulted due to reaction of the chemicals with the vessel and the other due to incomplete process knowledge; during the HSS audit preparation, the LLPI requisitioned old chemicals.

10-7b. Are there any lessons learned to be shared with others?

No Lessons Learned were developed for the waste management.

10-8. Did my Division receive any NCARs this year?

No NCARS were received.

10-8a. If yes, are these related to issues identified in the previous years? N/A

10-8b. How will they be prevented in the future? N/A

10-9. Were there any external regulatory inspections (HSS, DTSC, etc.) of our Division? (eliminated HSS-specific and rolled into here)

As one of the LBNL scientific divisions, ESD participated in a number of DOE reviews, audits and LBNL Safety Inspections conducted in FY09. A summary of these audits and their findings is presented below:

- (i) Management of Environment, Safety and Health (MESH) of the ESD programs: In August 2008, the LBNL Safety Advisory Committee (SAC) [previously called Safety Review Committee (SRC)] conducted a peer MESH review of the ESD programs. The objective of the MESH Review is to evaluate the Division's management of environment, safety, and health in its operations and/or research, focusing on the implementation and effectiveness of the ESD Integrated Safety Management (ISM) Plan. The MESH reviewers walked through ESD lab and office spaces and conducted interviews with ESD management and staff. The ESD safety coordinator provided documentation of ESD practices, incident reports and objective evidence of walkthroughs (i.e., completed checklists). The MESH review and its preliminary results were discussed in the FY08 ESD self-assessment report. The final report was provided on January 2009, and the Division Director's presentation at the SAC took place on April 2009. The report was forwarded to the ESD council and safety committee and posted on the ESD web page (<http://esd.lbl.gov/resources/health&safety/mesh.html>). Corrective Actions: CATS 6955 and 6956.
- (ii) DOE BSO Verification and Validation (V&V) Effectiveness Review: The DOE BSO V&V Effectiveness Review of selected LBNL corrective actions identified in the 2006 McCallum-Turner review was conducted on 9/29/08-10/9/08, this review found that ESD effectively completed the corrective actions and effectively implements the ESD ISM. The auditors also identified an ESD noteworthy practice, the ESD inspection log of the labs, which is used to document the monthly LLPI walkthrough.

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- (iii) DOE Safety Laser Audit 11/08: Only one ESD lab (70-158) has an AHD for lasers. He was notified and prepared for the audit but the auditors did not visit his lab. The ESH SME distributed issues identified during that audit to all laser users.
- (iv) HSS review preparation and ESD department/group safety assessments, fall 2008: Auditors from DOE Headquarters visited LBNL and assessed the ISM implementation. The auditors formally reviewed the following divisions: Life Sciences, Chemical Sciences, Physical Biosciences including JBEI, ALS with User and Support Operations, Facilities Maintenance and Construction Activities, and Engineering, focusing mainly on management feedback and improvement; hazardous waste, chemical management, injury and illness reporting, work rights and responsibilities.

In order to prepare for the audit:

- The ESD Director held two mandatory, all hands, ESD Town hall meetings addressing safety (10/21/08 and 12/9/08).
 - The ESD Director participated in all ESD Department and selected lab stand-downs during the HSS audit preparation.
 - The EHS Division provided two independent consultants (Craig Rife and Bob McCullum) to conduct informal assessments of the ESD ISM implementation. They reviewed staff JHAs and work authorizations, observed work and identified weakness, including use of PPE and staff understanding of their JHA as related to the work activities.
 - All ESD departments and groups (as identified in the JHA) had work stand-down (on November - December 2008) to address safety requirements, discuss the issues identified during audit preparation, inform the staff of the EHS division new PPE policy, discuss JHAs as related to the work activities, review the ESD ISM requirements and address the staff's concerns. Some department heads used the stand-down as part of the bi-annual department head walkthrough.
 - The EHS Division also required that teams of staff from other divisions visit and evaluate activities in different division. Staff from Nuclear Sciences and Physical Biosciences Divisions visited ESD (December 2008-January 2009), interviewed ESD staff and reviewed work activities and identified areas of concern, including not clear articulation of JHA/Work Authorizations, pre-staging of waste, and confusion on the PPE requirements. Corrective Actions: All issues identified during the HSS audit preparation were discussed with the individual staff, LLPIs, supervisors and Department Heads. They were also extensively discussed in two town hall meetings that exclusively addressed safety issues.
- (v) LBNL Biosafety Technical Assurance: On December 15, 2008, the LBNL Biosafety Officer reviewed BUA053 and evaluated its implementation both in lab 70A-2275 and ALS beam line 1.4.3 and 1.4.4. In lab 70A-2275 a sharps container was not labeled "Unregulated sharps" that was corrected on the spot; as a result no ESD corrective actions developed. An observation was also made that the lab door placards identify all 70A-2275 lab as a BL2 area and recommended that the BUA modified to specifically designate 70A-2275 and 70A-2275B as BL1 and 70A-2275C as a BL2. Corrective actions identified for ALS were initiated and tracked by the ALS Safety Coordinator. The Biosafety Technical Assurance report was submitted on 1/30/09. Corrective Actions: The finding identified in the ESD lab 70A-2275 was corrected at the time of the assessment. The ALS safety staff would address the findings identified at the ALS beam line.

- (vi) LBNL Select Agent Annual Exercise: On December 15, 2008 the annual Select agent exercise was conducted with the participation of the PIs, the LBNL biosafety officer, the ESD and LSD safety coordinators, the Emergency Management personnel, and DOE/BSO representatives, as required by the Select Agent Plan. Different hypothetical scenarios were reviewed and discussed. Corrective Actions: No issues were identified.
- (vii) DOE Environmental Management Systems (EMS) Audit: The EMS Audit was conducted on 4/28/09 to 4/30/09. Two ESD labs were audited (lab 70-158 and lab 70A-2253) on the measures taken to reduce the impact of work activities on the environment. The audit focused on (a) energy efficiency or use, (b) environmental compliance, (c) "green" purchasing, (d) pollution prevention, (e) recycling, (f) toxic or hazardous chemicals and materials, and (g) water conservation. The audit went extremely well and no deficiencies were identified. General awareness of the EMS is an area where improvements can be made, although the auditor acknowledged that LBNL's researchers have a good level on knowledge on relevant controls for their work activities.

In the ESD lab 70A-2253 the auditor was impressed with the thought and effort the staff put in environmental resource conservation and reduction of the amount of plastics used and hazardous waste produced. This includes: (a) using reloading inserts for the tip boxes, which are autoclaved to be sterilize between uses; (b) recycling the plastic insert supports when finished with the refills; (c) recycling any tip boxes which cannot be reloaded or that have lost their structural integrity; (d) using reusable filtering devices whenever possible (changed over from disposable filter units to reduce plastics use); (e) using the same tube of organic solvents when performing key nucleic acid extraction steps for a second round of sample extraction, thereby halving the amount of organic solvents used for each sample (halve the amount of hazardous waste produced); and (f) using less toxic chemicals to achieve the same purpose whenever possible. Corrective Actions: No issues were identified. The auditor found the lab staff very knowledgeable and their actions in line with the EMS principles.

- (viii) Divisional HSS mini audit: The mini ESD HSS review was conducted on 5/22/09. In following up on the HSS audit, LBNL scheduled mini HSS reviews (an internal assessment based on the HSS format) for all divisions that did not participate on the HHS audit. A team of two auditors (an EHS professional and a consultant for EHS) conducted the mini ESD HSS review. They reviewed the ESD JHAs, formal authorizations, and ESD ISM plan and evaluated the overall ESD ISM implementation in the work place; a number of ESD labs were selected as representative of ESD laboratory and field work: lab 70A-4403; lab 70A-2275; lab 70-158; labs 70-114/116/131; BLDG. 64-field work staging and machine shop; and BLDG. 51F. The strengths, weaknesses and opportunities for improvement were identified and discussed with the ESD Director and deputy director at the audit closeout meeting. Additionally, the ES&H Division Deputy director presented the final audit report at the ESD Council meeting on 6/29/09. The divisional strengths, weaknesses, opportunities of improvement identified in the report are summarized below:

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ESD Strengths:

1. ESD sustained impact on safety behavior and performance as it relates to planning, authorizing, and conducting work in ESD.
2. Division personnel were clearly able to describe the process by which hazards are identified, appropriate controls are established, and authorization to proceed with work is granted. Similarly, personnel were knowledgeable of the governing work authorization documents (whether they be JHAs, AHDs, and/or RWAs) and the role of such in the planning, authorization, and execution of work activities.
3. Division personnel were also able to identify the “chain of command” for work authorization.
4. On-the-job training (OJT) and/or mentoring is a key mechanism used in Earth Sciences to assure that operation of key equipment or execution of key processes (1) is done safely, (2) provides the appropriate quality of research results, and (3) protects the integrity of the equipment.
5. The Off Site Safety & Environmental Protection Plan (OSSEPP) appears to be a best practice for the Laboratory in terms of a traceable and rigorous process for systematically evaluating hazards and applying controls for offsite (i.e., outside) projects.
6. The condition of the vast majority of laboratories and work areas visited reflect a conscientious attitude toward safety.
7. Personnel were generally very engaged and enthusiastic about discussing their work and the safety).

ESD Weaknesses:

1. OJT was not consistently recognized. Notwithstanding the widespread use of OJT, clear and formalized expectations for the “competency expectations” and the need to have evidence of such are not consistently evident. ESD Corrective Action: To be further evaluated as a FY10 ESD self-assessment measure.
2. Personnel from the Division occasionally have assignments away from LBNL. In some cases it is believed these personnel are Work Leads (and retain their Work Lead authorities and responsibilities while on travel). In such cases, it is not clear if a formal safety delegation either occurs or is required when a Work Lead is away. For example, the Work Lead in Building 70A/4403 was leaving the Laboratory for a period of time and – when asked about delegating authority – indicated that the students would be performing low risk activity and the lead researcher in Building 70/4403 and that a senior researcher in an adjoining lab would be providing oversight. ESD Corrective Action: To be further evaluated as a FY10 ESD self-assessment measure.
3. The Building 51F/102 door can be inadvertently opened. The exposure risk for personnel entering is zero since the door interlocks will shut off the CT scanner. ESD Corrective Action: The LLPI posts a “Do Not Enter” sign on the door when an experiment involving the CT scanner is in progress.
4. The gas cylinder inventory in 70A/2275 was not accurate since at least two were empty and should have been removed. ESD Corrective Action: The cylinders were removed and action was discussed and verified during the division director’s walkthrough.

ESD Opportunities for Improvement:

1. Provide additional structure/consistency for assuring the personnel demonstrate appropriate competency on equipment (or work processes) prior to receiving

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authorization to work without supervision by (i) designating in each laboratory what equipment or processes are to be the subject of OJT requirements (ii) establishing for such equipment or processes, -specific competency expectations against which personnel are evaluated; and (iii) requiring the production of formal “evidence”, which establishes that the competency has been demonstrated. ESD Corrective Action: To be further evaluated as a FY10 ESD self-assessment measure.

2. Assure that an expectation is established which requires the delegation of safety responsibilities when the Principal Investigator/Work Lead is not present for extended periods. Consider implementing a general delegation protocol for personnel who are (i) Work Leads, (ii) on long-term off-site assignments, and (iii) concurrently responsible for on going research activities at the Laboratory. ESD Corrective Action: To be further evaluated as a FY10 ESD self-assessment measure.
3. Provide an enhanced administrative control on the north-facing door in Building 51F/102 – to increase the likelihood that the door cannot be inadvertently breached/opened and terminating an on-going experiment. ESD Corrective Action: The LLPI posts a do not enter sign on the door when an experiment involving the CT scanner is in progress.

Institutional Opportunity for Improvement:

Although outside of the domain of ESD, the Laboratory should consider the need for a single framework for planning off-site work (i.e., work that is not governed by the host location’s safety and health program) and should assure that the OSSEPP process is recognized as a key job hazard analysis process.

10-9a. Were there any notices of violation/ noted areas of concern?

All issues are identified above after each audit/assessment summary discussion. The HSS mini audit identified some weaknesses that were similar to the ones identified for other divisions during the HSS audit. The findings were presented in the ESD council by the EHS Deputy director and discussed in the safety committee meetings. ESD is working to address the issues through walkthroughs, town hall meetings, level-1 emails and enhancing processes. The weakness identified will be used as the basis of the FY10 division measures.

10-9b. If so, what were the corrective actions taken

- OJT was not consistently recognized. Notwithstanding the widespread use of OJT, clear and formalized expectations for the “competency expectations” and the need to have evidence of such are not consistently evident. ESD Action: ESD has identified the on-the-job training as an issue that requires attention. It was included in the FY08 self-assessment, it was identified as one of the FY09 divisional measures and it is listed both as a weakness and strength on the HSS mini audit report. Institutionally, there are no clear guidelines as of the requirements. The ESD safety coordinator is working with the LLPIs to identify the processes that require OJT within each lab and ensure that the staff has a documented OJT in the lab primer.
- Personnel from the Division occasionally have assignments away from LBNL. In some cases it is believed these personnel are Work Leads (and retain their Work

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Lead authorities and responsibilities while on travel). In such cases, it is not clear if a formal safety delegation either occurs or is required when a Work Lead is away. For example, the Work Lead in Building 70A/4403 was leaving the Laboratory for a period of time and – when asked about delegating authority – indicated that the students would be performing low risk activity and the lead researcher in Building 70/4403 and that a senior researcher in an adjoining lab would be providing oversight. ESD Action: The LLPI discussed it with her staff and assigned 2 work leads, so when one is away on fieldwork the other will cover both lab activities.

- The Building 51F/102 door can be inadvertently opened. The exposure risk for personnel entering is zero since the door interlocks will shut off the CT scanner. ESD Action: The LLPI posts a sign outside the entrance to inform facilities personnel not to enter when there is an ongoing experiment.
- The gas cylinder inventory in 70A/2275 was not accurate since the two empty cylinders were still located within the lab and the cylinders should have been removed to the cage outside bldg. 70A for pick-up by AIRGAS. ESD Action: The empty cylinder was removed and verified during the Division Director's walkthrough.

10-9c. How will they be prevented in the future?

The weakness had been identified already and will be monitored during the walkthroughs and will be evaluated during the next year's self-assessment.

10-9d. Are there any lessons learned?

In FY09, ESD developed two lessons learned:

- (i) Lessons Learned/Best Practices Database: LL09-0011 Failure by line management to provide oversight of X-Ray Authorization during medical leave by authorized personnel.
- (ii) Lessons Learned/Best Practices Database: LL08-0036 Incorrect battery use can cause equipment failure

10-10. Review RPG authorizations and identify ones applicable to our activities (RPG to provide listing by division). Review the requirements of applicable authorizations and determine if we are meeting them.

It is the ESD policy that the LLPI is responsible to meeting the RPG authorization requirements.

10-11. Review violations received from RPG. Determine effectiveness of developed corrective actions to prevent recurrence.

ESD received the following two (2) RPG non-compliance findings:

- XA Level 2 non-compliance finding: On December 2, 2008, the RPG identified on a memo to the ESD Director the following non-compliance finding: "Use of an X-ray machine without required radiation safety training or on the job training, unless escorted by properly trained personnel". A stop work was issued until all corrective actions

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were completed and verified by the RPG. The issue was that the PI listed on X-ray authorization (XA7020) was away on extended medical leave. The X-ray user requested that his name is listed on the authorization and the RPG stopped all X-ray work in lab 51F-102/103 until the user completed the required training, the authorization was amended to change the X-ray system supervisor and to incorporate card key access into the x-ray interlock. All required actions were completed, and documented in CATS 6522. The cause of these violations was the inadequate communication of the requirements, "Absent" which was defined in the memo as "away from the Lab for extended periods, such as medical leave or disability".

A lesson learned (LL09-001) was developed, entitled "*Failure by line management to provide oversight of X-Ray Authorization during medical leave by authorized personnel*" and distributed on May 23, 2009. The ESD safety coordinator verifies that the PIs responsible for rad-authorizations are not on medical leave for extended time and documents it on the ESD quarterly safety reports.

The non-compliance finding was discussed in the ESD council and the safety committee and reported on the ESD quarterly report. The RPG closely work with the ESD PI and safety coordinator to ensure that all appropriate actions were taken to address the issues and lift the stop work. All actions listed in CATS 6522 were closed on a timely. ESD has effectively addressed this finding.

- RWA Level 2 non-compliance finding: On March 3, 2009, the ESD PI was notified of a RWA (RWA 1154) Level 2 violation. ESD Staff purchased a via 1 of radioactive material, comprising 5 g of uranyl chloride (~2.5 uCi, U-238), while the authorization allowed to purchase only 0.49 uCi /vial. The radioactive material was never delivered nor used at the lab. No further non-compliance noted. The PI notified all lab staff of the violation and re-iterated his lab policy that all procurements should meet the authorization limits. The RWA was revised and the finding was documented in CATS 7104

11. Staff (including employees, participating guests, students and visitors) is effectively trained to properly perform work. Required training is based on JHA and on-the-job training identified by the division.

11-1. What percentage of our staff completed the JHQ in the past 12 months (in cases where the JHA process is not implemented)?

ESD fully implemented the JHA. No ESD staff or guest work under the JHQ.

11-2. What is our required training completion rate?

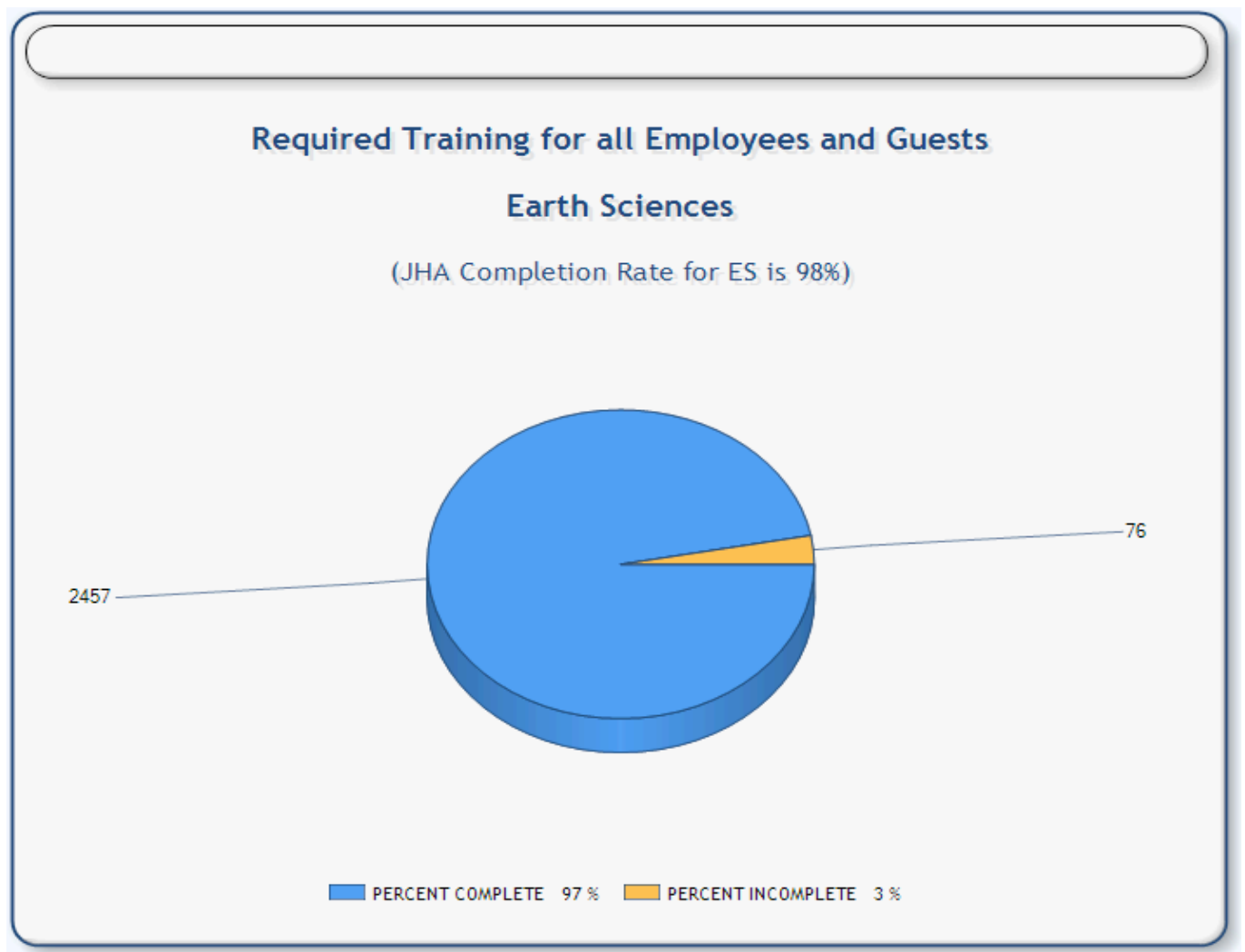
It is the ESD policy, as stated in the ESD ISM plan, that each employee's supervisor will ensure the required LBNL training courses are taken within 30 days of the JHA completion (exceptions are for courses that are offered less frequently). The training has been consistently reviewed and the results were communicated to the ESD management. A list of incomplete training is included in the ESD ES&H quarterly report, which is submitted to Division Council and safety committee. ESD Level 1 emails were distributed to remind

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supervisors and employees to complete their JHA and training, and to use the training profile in PRD discussions. The safety coordinator contacts individual supervisors and refers issues to the department heads for resolution. Outstanding training issues are also discussed in the division council meetings and the safety committee.

The ESD director emailed all faculty associates listing their outstanding training courses and asking them to complete them.

ESD met the PEMP Measures requiring LBNL staff will maintain at least a 90% completion rate for each division throughout the year. On January 2009, 97% training completion; March 30, 2009 training completion 96%; June 30, 2009, 95% completion; On September 30, 2009, the ESD training completion was at 97%.



11-3. Observe sampling of staff performing work.

All LLPIs are active scientists working in the labs, they train their staff to their experimental/technical procedures and observe their work. However, no formal process has

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been developed to document this activity. This was also identified as an institutional issue during the HSS audit.

The EHS electrical engineer observed loto performed in 70-143. Approved loto procedures were used.

11-3a. Are they following applicable policies and procedures?

Different LLPis develop different technical procedures and protocols based on their research activities. The acid neutraliazing procedures are formally documented and reviewed and apporved by the Waste Management. Each LLPis maintains his own porcedures in the lab primer.

11-3b. If not, have they been trained?

All LLPis are responsible for tarining their lab staff

11-3c. If trained, why not following policies and procedures? N/A

11-3d. If not trained, why not? N/A

ISM CORE FUNCTION 5: FEEDBACK AND IMPROVEMENT

12. Division implements an effective safety walk around program per the requirements of the Division ISM Plan. Division staff conducts safety walkarounds as assigned. Safety walkaround results are effectively integrated into division self-assessments as a component of the division's feedback and continuous improvement process.

12-1. Did we document walkaround requirements in our Division ISM Plan?

The ESD ISM specifies three (3) types of walkthroughs; an annual walkthrough is required for the ESD Director of all ESD lab, shop and office space. The ESD Department Heads are required to conduct a walkthrough twice a year of all office, lab and shop space in their respective department. The DOE BSO representative is invited to the ESD Director and Department Heads' walkthroughs. The LLPs are required to conduct monthly inspection of their Lab(s) and Shop(s) and documented it on the "ESD Inspection Log"

ESD Director's Walkthroughs: ESD implemented the walkthrough schedule as described in ESD ISM Rev8 that requires that the Division Director and/or Deputy Director inspect all ESD space (labs, shops and offices) at least once per year. The Division Director conducted his walkthrough in May-June 2009. The walkthrough results were reported to the department heads that were responsible for follow-up. The safety coordinator, ESH liaison and a DOE BSO representative participated in the walkthrough.

Each employee was required to complete the ESH supervisors' checklist (<http://www.lbl.gov/ehs/safety/assets/docs/SafetyWalkaroundChecklist.pdf>). The completed checklists were collected by the safety coordinator, reviewed and maintained as objective evidence of the activity, these records will be disposed upon validation of the FY09 ES&H self-assessment. Issues identified during the walkthrough were discussed with employees, EHS Division SMEs, as appropriate, and entered into CATS if not corrected immediately.

ESD has effectively implemented the ESD director's walkthrough requirement as required in the ESD ISM plan.

ESD Department Heads' Walkthroughs: ESD implemented the walkthrough schedule as described in ESD ISM Rev8 that requires that the ESD Department Heads' inspect their respective department space (labs, shops and offices) twice per year. The first department heads' walkthrough was incorporated in the divisional HSS audit preparation and conducted from November 2008 to January 2009. The second department heads' walkthrough was conducted in August to September 2009.

The safety coordinator, ESH liaison and a DOE BSO representative participated in the walkthroughs. Each employee was required to complete the ESD checklist http://esd.lbl.gov/FILES/RESOURCES/HEALTH&SAFETY/ESD_inspection_checklist_R4.pdf which was reviewed and collected by the department head and maintained by the safety coordinator as objective evidence of the activity. These records will be disposed upon validation of the FY09 ES&H self-assessment. Issues identified during the walkthrough were discussed with the employees, and entered into CATS if not corrected immediately.

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In conclusion, ESD has effectively implemented the ESD Department Heads' walkthrough requirement per the ESD ISM plan.

Lab-space Lead PIs' (LLPIs') monthly inspection of the Labs and Shop: The ESD ISM requires that each LLPI conducts a monthly inspection of the lab space and documents it on the "ESD Inspection log" (available on the ESD ES&H page). The LLPIs are assigned by the Department Head and they are responsible for resolution of all safety issues within the laboratory space. The LLPIs roles and responsibilities are discussed in the ESD ISM. The LLPIs are also the Area Safety Leads as described in Pub 3000. It should be noted that the DOE BSO V&V Effectiveness Review on 9/29/08-10/9/08, identified the monthly inspection of the lab space and the ESD Inspection log as a noteworthy practice.

In March 2009, the safety coordinator visited a number of ESD labs and reviewed the ESD Inspection Logs. It was noted that not all LLPIs consistently document the monthly lab walkthroughs. The results were discussed in the safety committee meeting (April 2009). The LLPIs were notified of the importance of consistently documenting their monthly walkthroughs and they were requested to delegate this responsibility to a senior lab staff if they are away from the lab. The Department Heads will continue to evaluate timely completion of the "ESD Inspection Log" during the department heads' walkthroughs.

An opportunity of improvement, fully documenting this activity, was identified and was communicated to the ESD LLPIs. The LLPIs are working scientists, they spend significant amount of time working in their lab and continuously self-inspecting their space; however, they do not consistently document the inspection. During the HSS audit preparation and outside reviews and assessments, it became clear that documentation of all required activities is essential.

ESD has effectively implemented the LLPI monthly inspection of their lab as required in the ESD ISM plan.

- 12-2. Have all personnel required to perform safety walkarounds, as defined in the Division ISM Plan, completed EHS 27, "Performing Effective Safety Walkarounds"?

An EHS027 was scheduled for ESD management and LLPIs, additional training is offered by the EHS division and new LLPIs have been notified to complete their training.

- 12-3. Did personnel perform assigned walkarounds as scheduled? How were results recorded? Are results recorded consistent with the Division ISM Plan?

The ISM walkthroughs by different levels of management, the staff were required to complete a checklist that was collected by the division director or department head and maintained by the safety coordinator.

- 12-4. Were all safety deficiencies not corrected on the spot documented? How?

Issues identified on the checklists were either corrected by the staff on the spot or entered into CATS. The safety coordinator tracks issues and oversees timely completion of CATS actions.

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- 12-5. How did we evaluate/analyze walkaround results to determine systematic weaknesses and/or opportunities for improvement?

All safety issues identified during the division director's and department heads' walkthroughs are entered into CATS by the safety coordinator. All observations are summarized and discussed with the employees at the time of the walkthrough. All walkthrough results are tracked in the ESD quarterly safety reports, discussed in the ESD council and safety committee. The department heads are responsible to resolve any issues identified in their department. They are notified by email and during the open discussions in the division council and safety committee. All department heads are permanent members of the safety committee.

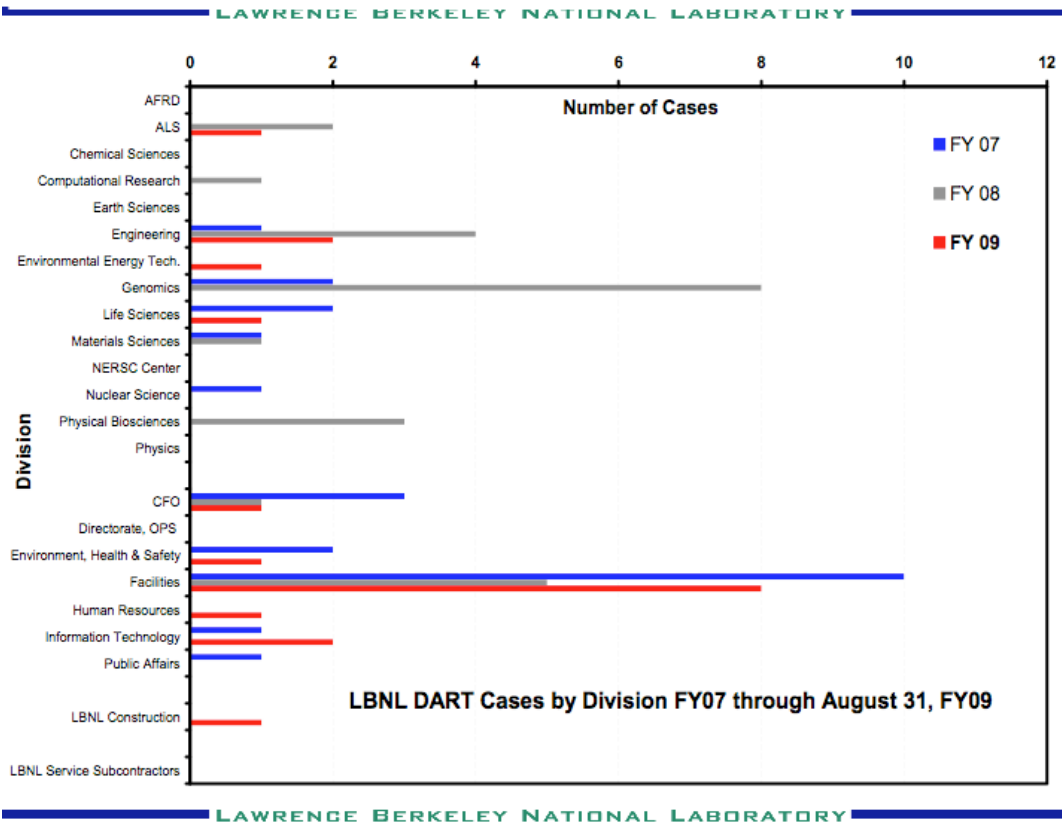
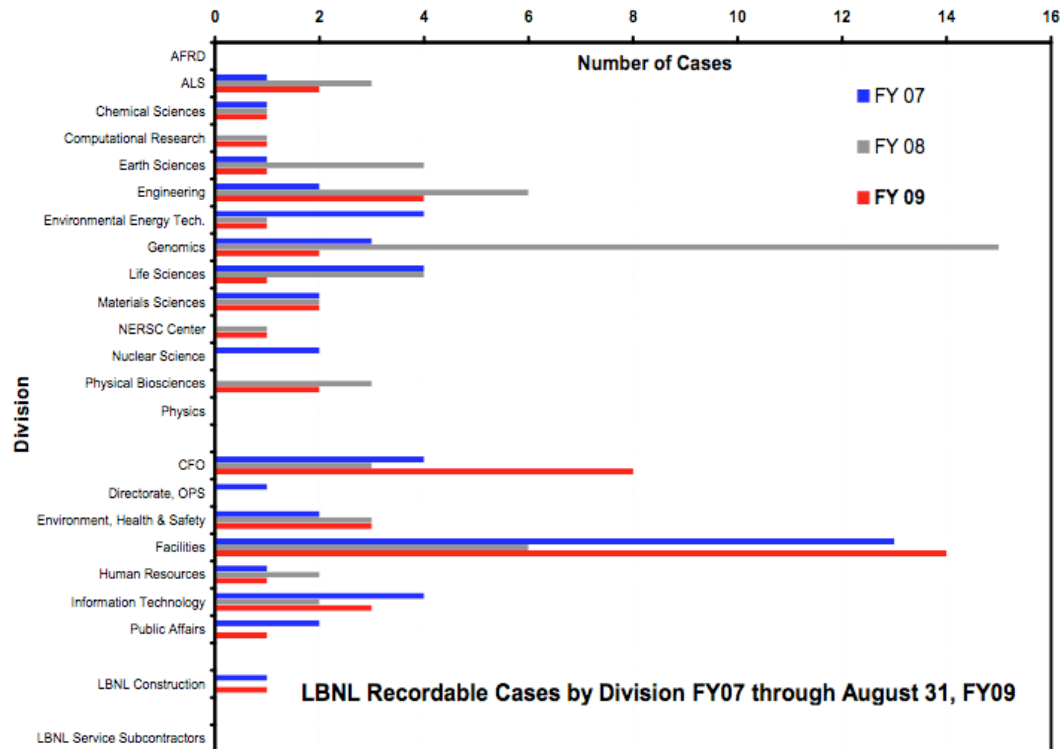
13. Division performs a thorough review of all accidents, injuries, incidents, near misses and concerns according to Lab policy and the division's ISM plan. Corrective actions to prevent recurrence are identified and effectively implemented.

- 13-1. Is our process for investigating staff injuries and accidents detailed in our ISM Plan?

The ESD ISM discusses the incident investigation process in accordance with LBNL requirements: for all ES&H incidents, the safety coordinator supports the Supervisor and schedules a meeting with employee, supervisor, EHS liaison, SMEs when needed, to understand causes and develop corrective actions. For recordable injuries, a tap-root analysis is performed, with an individual trained in tap-root analysis. ESD policy requires that the ESD Director is notified of all OSHA reportable incidents; the Department Heads of all injuries in their department; and Safety Committee reviews any incidents and the related corrective actions in their monthly meetings. The safety coordinator also discusses all incidents and corrective actions in the ESD Council meetings. The revised ESD ISM Rev. 9 requires that the investigation of an incident will be completed with 7 calendar days.

ESD management ensures that the supervisors and work leads promptly respond to any discomfort issues and make every effort to timely address them before they become a serious incident. Workload is discussed between the supervisor and staff and additional resources are added as needed. In FY09 ESD had 9 first aid incidents, with only one characterized as an OSHA recordable with no loss of workdays due to injury. The graphs below compare the FY07, FY08 and FY09 incidents:

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13-2. Did we follow this process?

ESD has followed the process as discussed above. When the supervisor or the employee were not able to complete the incident review within the required time, the ES&H SME was notified of the reason and the expected time of the investigation completion. ESD makes a serious effort to meet the 7-calendar days response time. In FY09 80% of the supervisor's reports were completed within 7 calendar days.

1. First Aid incident (Injury Date 09/21/09; Date Reported 09/21/09): Employee experienced swelling in her thumb after a period of increased typing and mousing in support of the ESD Symposium. Employee has had previous ergonomic related incidents, multiple assessments by the LBNL ergonomists and ergonomic upgrades to her workstation. Action(s) to prevent recurrence: (i) the RSI Guard was reinstalled, (ii) the employee will continue to take courses for using Dragon voice recognition, and (iii) the employee will regularly alternate hands for mousing.
2. First Aid incident (Injury Date 08/20/09; Date Reported 08/20/09): Employee noticed minor discomfort in her right wrist. It was not clearly if it was attributed to an increase in the volume of samples processed and the use of a pipetting resuspension technique, or in non-occupational activities (piano/guitar playing, drumming etc.) Action(s) to prevent recurrence: (i) Employee received a lab ergo evaluation, several alternative pipettes were reviewed and an electronic pipette was recommended for follow up. (ii) Employee's supervisor and employee discussed the need for additional help to process samples when workload increases. (iii) Employee's supervisor recommended a follow-up visit to the health center for reevaluation.
3. First Aid incident (Injury Date 07/07/09; Date Reported 07/07/09): Employee cut her finger and palm when she pulled back the restrainer bar on the bus bike rack to free her bicycle. She cut her finger on a metal part of the bicycle rack system as the restrainer bar was leaving her hand. Action(s) to prevent recurrence: (i) Employee visited Health Services for treatment and tetanus shot. (ii) Bus services asked to review rack system and determine if there is a metal part that caused the cut or if maintenance is needed on the restrainer arm. (iii) Employee submitted a EH&S concern. (iv) Documented in CATS 7594.
4. First Aid incident (Injury Date 06/24/09; Date Reported 07/10/09): Employee injured the muscle of forearm while in off-site drilling project in Greenland Canada. The employee was holding the cable while others were pulling to assemble a 400-meter long cable assembly that consisted of an inner cable protected by an outer hose, for approximately six hours. Action(s) to prevent recurrence: Employee had the training and experience in running off-site field projects; (i) he stopped and re-evaluates the activity, and (ii) instructed others to perform lifting/carrying tasks while still on trip to Greenland. (iii) The employee, upon return, visited the LBNL Medical Services for medical evaluation.
5. OSHA - First Aid incident (Injury Date 04/28/09; Date Reported 4/30/09): An employee arrived at Health Services with complaints of lower back pain which radiated down left leg and stated that she slipped on 04/28/09 while walking on the sidewalk between building 64 and building 90. Employee had good strength with left leg but experienced discomfort if seated for extended periods. Action(s) to prevent recurrence: Employee used ibuprofen after slip but no ice. Requested to be seen by a medical doctor at US Healthworks for evaluation and treatment. On 5/1/09 the incident

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- was categorized as an OSHA recordable incident due to Physical Therapy and medication. Documented in CATS 7336 and related CATS 7621
6. First Aid incident (Injury Date 12/17/08; Date Reported 12/17/08): An ESD Research Associate hit her head at the shelf trying to retrieve a vial. Supervisor and employee were away from the lab for the holiday shutdown before the investigators report was completed. As required by the ESD ISM Line Management responsibility, the department head responded to SAAR. Action(s) to prevent recurrence: The EHS Liaison visited the lab to evaluate set up; no corrective actions were identified with lab layout.
 7. First aid (Injury Date 11/11/08; Date Reported 11/11/08): An employee was pipetting HCL (43ml) in to container when the pipette came loose from dispenser dropping out of the hood and splashing on the employee's arm and some droplets on face HCl in a fume hood when the pipette she was using broke, causing the acid to splash on her arm and face. She was wearing all required PPE and quickly removed her lab coat, rinsed off the chemical and notified the work lead. She was taken to Medical Services, as a precaution. The incident was reported to EHS division and evaluated as ORPS but since the proper processes, including appropriate PPE, were used and no injury was sustained, it did not result in an ORPS report. Action(s) to prevent recurrence: (i) Use of graduated cylinder instead of pipette for this large of a volume. (ii) Documentation in a SAARs report was delayed due to the extensive investigation of this incident. In Addition to the ESD and EHS Divisions directors the LBNL interim director was also notified of the incident and all evaluations and related actions.
 8. First aid (Injury Date 11/06/08; Date Reported 11/6/08): The same ESD employee as above, had a superficial cut with no bleeding or oozing, on her right hand index finger while removing stopper from chipped glassware. Supervisor was away from LBNL, ESD safety coordinator notified the SAAR administrator that the supervisor would not be able to complete SAAR within 7 days and requested extension. The process does not allow for an extension and the SAAR report was completed late. Action(s) to prevent recurrence: (i) New lab policy- disposing of stopper and glassware or using heavy gloves when handling glassware and stopper. (ii) The lab work lead was assigned by the supervisor to retrain and oversee the employee's work.
 9. First aid (Injury Date 11/05/08; Date Reported 11/6/08): An employee was exiting bus #3 at the cafeteria bus stop when she lost her balance resulting in her scraping her left knee on the metal tray that holds the wood wheel stop. She went to Health Services with abrasion to her left knee and a slight amount of bleeding. Nurse applied steri strips, bacitracin and band-aid; tetanus up-to-date. Action(s) to prevent recurrence: (i) The ESD EHS Liaison contacted bus services and recommended evaluating (a) if the wheel stop be relocated to another area within the bus or can a different fastening method be implemented that is not so rigid and sharp and (b) if the drivers were instructed to acknowledge incidents. (ii) The Bus services acknowledged that they were inspecting the buses for the wheel chock holder and sharp edges and that they were in the process of updating the bus services safety policies and would include what drivers should do in case a passenger slips or is injured on a bus. They would also be checking the non-skid stripes that are on the buses to insure they are in good working order.

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13-3. Review injury and accident reports (SAARs).

13-3a. Did we complete a thorough investigation of each first aid case reported?

All first aid cases were treated by the the medical staff and thoroughly investigated.

13-3b. Did the supervisor complete a Supervisor's Accident Analysis Report (SAAR) for each case?

The supervisor or teh Department Head (when the superviosr is not on-site) investigates and compeletes a SAAR for each one of them. Department Head assumed responsibility and addressed the SAAR for the incident dated:12/17/09 when the supervisor was away form the lab.

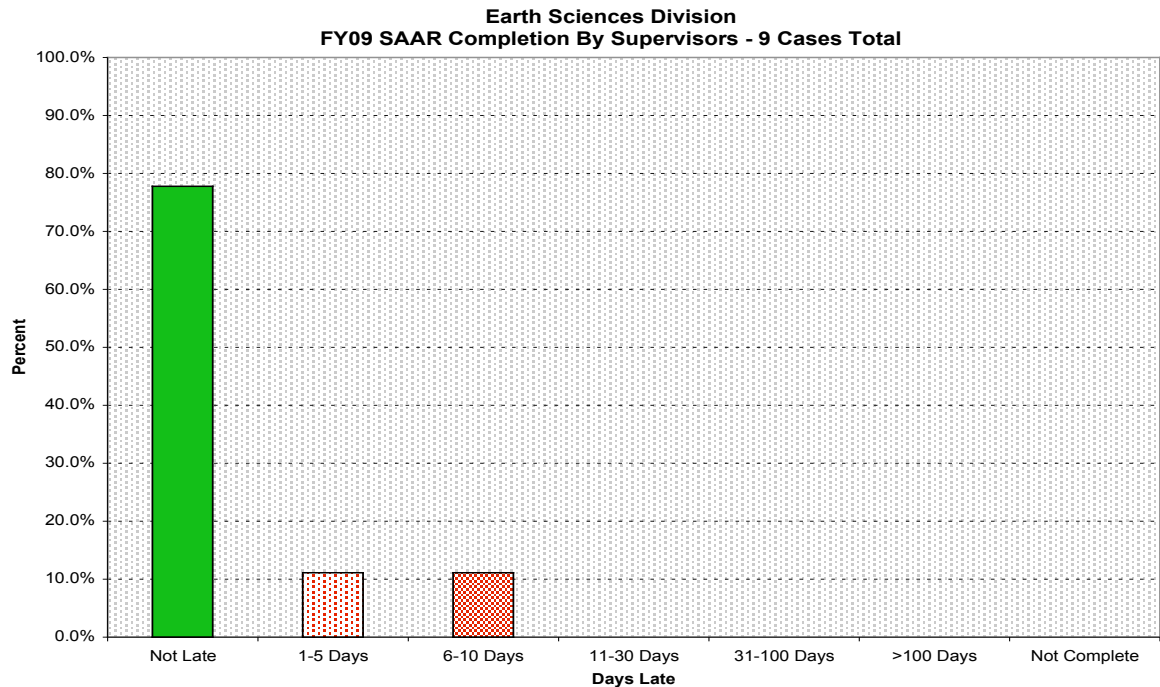
13-3c. Did the Division Safety Coordinator critically review each SAAR and return to the supervisor for revision or approve?

The Safety Coordinator works with the supervisor and EHS Liaison to complete a factual and accurate Accident Analysis Report (SAAR) for incidents. During the Safety Coordinator's absence from LBNL, the ESD Business Manager assumed responsibilty and formally desiganted as back-up in order to meet the reporting guidelines and ensure timely completion of all SAARs.

13-3d. Was each SAAR release within the required 7 day period from report of injury?

The SAARs for two (2) of the above first aid cases (incidents 7 and 8 described above) were completed beyond the 7 day requirement. The ESD safety coordinator notified the SAAR administrator that the supervisor was away from LBNL, would not be able to complete SAAR within 7 days and requested extension. However, the process does not allow for an extension, there should be a way to allow for additional time when the supervisor is away from the lab. The cases involved the same employee, the supervisor was away and the second incident happened just before the case was schedueld to be evaluated. The second case took precedence due to the potential ORPS management concern. As soon as, the investigation was completed and all involved parties, including the ESD and EHS division directors, were satisfied with the results, the SAARs were completed. At the time, teh ESD supervisor and safety coordinator did not know that it is acceptable to enter and approve a reliminary SAAR which can be updated or modified when the investigation is completed and the were trying to gather all facts before generating the report.

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13-4. How effective were our corrective actions?

13-4a. Was a weakness or deficiency in the application of the division's ISM identified (where appropriate) as a root cause for the occurrence of each preventable injury?

No weakness or deficiency in the application of ESD's ISM was identified.

13-4b. Was one or more corrective actions identified for each identified deficiency?

The corrective actions as listed in the SAAR were effective and the issues were addressed timely. ESD Line management addressed all corrective actions timely

13-4c. Was the corrective action tracked to completion in the LBNL CATS system?

The corrective actions that were entered into CATS are identified after each incident above.

13-5. Did we share lessons learned with others via the Lab's Lessons Learned and Best Practices database? Did we apply any lessons learned from the Lessons Learned and Best Practices database that may help reduce injuries?

In FY09 no lessons learned were identified as part of the first aid incident investigations.

14. Division shares lessons learned from accidents, injuries, incidents and near misses with Lab staff via the institutional Lessons Learned and Best Practices database, as appropriate. Division incorporates applicable lessons learned into work planning and performance processes.

14-1. Review our accidents, injuries, incidents, and near misses.

14-1a. How did we decide which lessons learned to share?

Lessons learned are identified and developed based on the corrective actions of incidents and work practices. They were drafted by the responsible LLPIs and/or supervisors based on their general institutional applicability and issued to help other LBNL staff recognize and prevent future incidents.

14-1b. Which lessons learned did we share with others via the Lab's Lessons Learned and Best Practices database?

No lessons learned related to accidents, injuries, incidents, and near misses were issued.

14-1c. Do we have any other lessons learned that Lab staff would benefit from?

No other lessons learned were identified.

14-2. Review recent lessons learned from the Lessons Learned and Best Practices database. Select three or four of significant relevance to our division.

14-2a. Did we apply lessons learned and recommendations from the selected Lessons Learned and Best Practices in our divisional work practices? How?

All lessons learned generated by the LBNL lessons learned database are automatically distributed to the safety coordinator, LLPIs and staff based on the tasks and hazards identified in their JHA. The staff review and apply that information on their daily work activities.

14-2b. Observe staff performing work. Has staff incorporated lessons learned and recommendations from the selected Lessons Learned and Best Practices? How? If they haven't, why not?

The LLPIs are responsible to ensure that all work performed in their labs is reviewed, evaluated and conducted based on the institutional requirements and best practices. They observe work and evaluate effectiveness. In FY10 ESD will further evaluate ways to implement and document this practice.

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15. ES&H deficiencies that cannot be resolved upon discovery are entered in the LBNL Corrective Action Tracking System in a timely manner and tracked to resolution. Deficiencies include those from workspace inspections, self-assessment activities, SAARs, Occurrence Reports, Non-compliance Tracking System Reports, environmental inspections, Division Self-Assessment, EH&S technical reviews, Management of ES&H (MESH) Reviews, and external appraisals and inspections.

- 15-1. Review a sampling of the issues identified from workspace inspections, self-assessment activities, SAARs, Occurrence Reports, Non-compliance Tracking System (NTS) Reports, environmental inspections, Division Self-Assessment, EH&S technical reviews, Management of ES&H (MESH) Reviews, and external appraisals and inspections, etc.

- 15-1a. Have we appropriately categorized issues from assessments (issue/finding vs. observation)?

All issues identified during the walkthroughs are entered into CATS. Observations are discussed with the LLPIs and staff and the Department Heads. The CATS numbers are included next to the findings through this report. First Aid incidents and related corrective actions are discussed in the safety committee meetings.

- 15-1b. Were these issues entered in CATS in a timely manner?

CATS entries are made on a timely and tracked in the quarterly ESD safety reports submitted to the ESD management (ESD council) and safety committee.

- 15-2. Review a sampling of corrective actions that were generated as a result of issues identified through various forms of assessment, events, incidents and/or injuries.

- CATS 4279 - Provide pressure relief. Pressure relief valves have been installed on the main Ar supply that originates from a liquid Ar dewar for the ICP, and on N2 line that drives valves on the mass spectrometer. Conventional pressure relief valves can not be installed on the three lines (Ar, H2, He (or Ne)) that supply the hexapole on the mass spectrometer due to the requirement that these lines not only take 5 psi pressure of the gasses, but that it is also necessary to evacuate these lines to high vacuum (10⁻⁷ mbar). Pressure relief valves are not designed for that kind of application, and will leak under vacuum (I didn't know that at the time we ordered the parts, and didn't until I asked John Seabury that direct question). John Seabury agrees that the risk is low, and that the vacuum requirements for those lines preclude pressure relief valves, and the situation can remain as it is. However, it may be possible to use a rupture disk system to provide some level of pressure protection of equipment while allowing high vacuum. We are pursuing that avenue for these three lines - Open
- CATS 5468 - The electrical panel PNL-116-70 is located on top of a bench, so the legally required clearance cannot be maintained. The requirement is for a space that is 30" wide and 36" deep from the floor to 6'6". Since there is a bench in front of this panel it is in violation. It is recommend moving the panel. - Closed 7/02/09

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- CATS 6138 - Incorrect owner name. Chemical data not at use - Closed 10/31/08
- CATS 6195 - Institutional. LBNL's ENM control procedures were not adequately defined and implemented in the work place - OPEN
 - Action 6195-5—ESD: Work areas involving ENMs will be conducted in a posted designated area - ESD action completed and verified on 11/25/08
 - Action 6195-7-ESD: Nanomaterial containers will be properly labeled with the chemical name and nanomaterial identifier and/or sticker denoting nanoscale presence. - ESD action completed and verified on 11/25/08
- CATS 6354 - Institutional. The CMS link to the MSDS-UC Chem Quick link was not functional - Closed 12/16/08
- CATS 6355 - Update the airborne silica particle hazard assessment for 70A-141 lab. - Closed 1/06/09
- CATS 6550 - Unsecured computer equipment stacked on open shelving more than 3' above the floor. Rack number A15 at SE end of room. Location: 50A-2109C,D - Closed 03/05/2009
- CATS: 6522 - XA Level 2 Non-Compliance Findings. Closed 1/27/09
- CATS: 6599 - Waste generator's training was not completed prior to waste pickup request Q13693. The Waste Management group notified the ESD staff and safety coordinator that the waste cannot be certified for pickup until the EHS0622 training is completed and the rad tag is resubmitted. - Closed 02/25/2009
- CATS 6955 - During the August 2008, ESD MESH review the SRC reviewers identified the following concern: "Two recently hired employees who were working in the office area in bldg. 90, although up to date with the JHA and training, showed relatively poor understanding of the ISM concept and personal responsibility for safety. Supervisors and new employees must spend more time during the initial work days after hire to convey and explain the principals of Safety culture at LBNL and within the division to assure that all new employees are brought up to speed as soon as possible." - Closed 03/06/09
- CATS 6956 - During the August 2008, ESD MESH review the SRC reviewers identified the following concern: "Occasional housekeeping issues were noticed in the lab areas e.g., boxes with lab supplies stored on the floor in the hallways. These are relatively small concerns from the safety point of view but supervisors and their employees should be constantly encouraged to follow good housekeeping rules before they escalate into real safety problems" - Closed 03/06/09
- CATS 6957 - Some items that require CATS entry are entered into the Work Request Center database in lieu of CATS. - Closed 03/06/09
- CATS 6958 - Some LLPIs monthly lab inspections were not documented upon completion. The ESD ISM Rev.8, requires that the record will be collected by the safety coordinator at the end of the fiscal year to be included in the annual self assessment documentation - Closed 04/03/09
- CATS 6959 - One waste item was stored in excess of the ESD 6 month limit on waste storage in an SAA - Closed 03/06/09
- CATS 6960 - First Aid SAAR corrective actions - Closed 04/03/09

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- CATS 7104 - Purchase of material with activity level greater than the currently authorized in RWA 1154. – Closed 05/29/09
- CATS 7336 -An ESD employee walking in front of Bldg. 55 tripped on the surface transition between the walkway and the adjacent manhole cover and got injured. (SAAR Corrective action) – voided without explanation: CATS 7621 was issued to document actions related related to CATS 7336.
- CATS 7594 –An employee removing her bike from the bus bike rack cut her hand. Actions were documemnted in CATS- Closed 09/02/09
- CATS 7431 - Evaluate the Plugmold strip installed in Lab 2275 (DD Safety Walkaround) – Closed 08/06/09
- CATS 7599 - The emergency eyewash/safety shower was last inspected 4/26/09 and it is overdue in lab 70A-4405-closed 9/24/09
- CATS 7621 opened to document actions related to CATS 7336 Resolution explained by reviewer. - Actions to address CATS 7336 were documented by the reviewer and CATS issue closed and denied since all facilities work was completed.

It is noted that CATS 7336 was voided with out explanation or online documentation. The initiator was listed as the responsible individual for the action, even though at the time the initiator was away from the lab.

15-2a. Are corrective actions completed in a timely manner (i.e. are we completing our corrective actions by their established due date?) If not, why not?

15-2b. Have we requested extensions for corrective actions' due dates? Are these extension requests valid?

- (i) An extension was requested for CATS 4279. This issue is still open based on further evaluation of the best ways to correct the system.
- (ii) An extension was requested for CATS 7104, the revised RWA was under review and not approved at the time the CATS was due. The CATS was closed upon clarification by the EHS radiation group manager.

15-2c. Have the corrective actions been effective in preventing similar issues? If not, why?

The corrective actions have been effective in preventing similar issues. Continued communication of issues by email, town hall meeting presentations and safety committee discussions of identified issues help prevent recurrence. CATS are also included in the quartely safety reports.

15-2d. What is our CATS completion rate (regardless of schedule)?

All CATS initiated in FY09 have been closed as indicated above. One issue (CATS 4279) that is still open was due to design and it is still evaluated on the best ways to correct the system.

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15-2e. What is our CATS on-time completion rate (excluding entries sent to the Work Request Center)?

All CATS initiated in FY09 have been closed

15-3. How did we address issues and other opportunities for improvement identified in FY08 self-assessment (division self-assessment, MESH, ESH Technical Assurance)?

Issues identified on the checklists were either corrected by the staff, entered into CATS or resolved through a work order. The safety coordinator has the main responsibility of entering issues in the CATS database. Opportunities for improvement were communicated to the staff during the management walkthroughs, at town hall meetings and by email.

III. ESD Performance Measures

ESD FY09 Self-assessment Measures

As part of the ESD Self assessment process the following ESD specific measures were identified and evaluated. They were presented in an ESD all hands Town hall meeting on March 30, 2009. They were discussed and evaluated during the HSS mini audit by the two EHS auditors

- (i) ESD has 6-month limit on waste storage in an SAA.
The following actions were taken to address and evaluate this measure:
 - The ESD Safety coordinator reviews the waste stored in the SAAs and evaluates compliance quarterly during the Waste Management walkthrough.
 - CATS 6959 was initiated to address this issue.
 - The Department Heads' checklist, which is often used by the LLPIs for their monthly inspection, lists the requirement on item L10:
http://esd.lbl.gov/FILES/RESOURCES/HEALTH&SAFETY/ESD_inspection_checklist_R4.pdf
 - The waste management scheduled pick up times (for Bldgs. 70/70A, 51 and 64) are posted on the ESD Event Calendar at <http://esd.lbl.gov/newsandevents/events/calendar/>
 - All SAA issues are discussed in the Safety committee and with the respective Department Head.
- (ii) Ensure that all ESD guests working onsite have the appropriate, documented on the job training (OJT) to conduct their work safely.
The ESD OJT is the informal training provided by the LLPIs to staff working with specific equipment or procedures and it is under LLPI management control. The OJT is commonly practiced at different ESD labs but it is not usually formally documented.
 - a. What processes require OJT;
 - b. Who needs OJT;
 - c. Written procedures (detailed enough);
 - d. OJT documentation;
 - e. How to incorporate OJT into individuals' JHA.The OJT is discussed on the ESD ISM, on ESD Town Hall meetings, and evaluated during the mini HSS audit. The auditors found
- (iii) Work with the ESH division to develop task-based JHA for ESD off site fieldwork.
ESD identified the need to incorporate off-site field activities in individual JHAs. In FY09, this item was investigated and discussed with JHA program manager but it was put on hold due the HSS findings and the ongoing LBNL effort to re-evaluate and redesign the JHA process.

In summary, ESD groups that conduct fieldwork identified it as a task on the group JHA with the Off-site Safety Environmental Protection Plans (OSSEPPs) as the appropriate hazard analysis, controls, and work authorizations for fieldwork. The ESD PI responsible for the filed activity issues the OSSEPPs and they are not formally incorporated into the JHA database and the specific training requirements are not linked to the individuals' training profile. ESD has requested that EHS Division SME develops an off-site JHA or more formally link the OSSEPPs hazards and training to the JHA.

On April 27, 2009, the ESD Deputy Director, safety coordinator and JHA Program Manager met to discuss and evaluate ways to formally link the OSSEPPs to the workers' JHA in an effort to improve

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the off-site work controls and make the off-site work authorizing documents readily available and transparent to the ESD users (i.e., employees, supervisors and work leads). An option discussed was to maintain the current format and local controls and evaluate the forthcoming changes and updates to the Tasked Based JHA. We should follow a similar process and eventually link the OSSEPPs to the JHA the same way an AHD or Bio authorization would be linked to an individual's JHA. This will happen after the JHA system updates are implemented.

It was also noted that PUB 3000 section 5.5, Off-Site Safety, has not been recently updated by EHS Division there may be a disconnect between the current practices and the institutional requirements for off-site work. It was discussed this sections be reviewed and, if appropriate, revised to meet the work authorization requirements of other PUB3000 chapters

- (iv) All ESD employees who telecommute should use EHS059 to evaluate their workstation. The ESD safety coordinator contacted HR and requested a list of all ESD staff who have a formal telecommuting agreement documented in their HR file. Five (5) staff members were identified. HR personnel verified that all but one had pictures of their workstation and computer set up attached to their telecommuting agreement. The one employee who had not included photos of her workstation had completed EHS059 and EHS058. By reviewing an employee's training profile there is no easy way to identify what work location was assessed. All ESD staff are encouraged to evaluate (EHS059) their workstations and computer use at locations outside their regular workstation. The ESD safety coordinator will discuss with the EHS Ergo staff the possibility to include the work location on the employees training profile next to the self-assessment course.
- (v) Near miss database and formal communication is developed to track and distribute the information to the staff. In FY09, ESD developed an online database to capture all reported near miss events. The Near miss formal communication link "Report a near miss - new!" is posted on the ESD web home page <http://esd.lbl.gov/home/>. The near miss program is discussed on the ESD ISM plan, and the ESD ESH web at <http://esd.lbl.gov/Resources/Health&Safety/nearmissprogram.html>. The importance of the near miss program was discussed in a Town Hall meeting and the New ESD staff orientation. Near misses were also discussed in the ESD Council and the Safety committee.

FY09 ESD Noteworthy Accomplishments

- A DOE BSO representative is invited to the safety committee, ESD SAA quarterly walkthroughs, and ESD walkthroughs.
- The DOE BSO V&V audit found that ESD is effectively implements the ESD ISM and noted as a noteworthy practice the LLPI walkthrough.
- During a DOE/BSO walkthrough, a noteworthy practice was observed for the ESD laboratories located in Building 70A. Every single ESD laboratory that was walked by had a completed compressed gas inventory sheet.
- The ESD staff implement good EMS practices both in the labs and offices.
- The ESD web contains a plethora of ES&H information and the ESD ISM implementation.
- ESD conducted a second annual ISM survey with higher staff participation. The survey was posted on the ESD ES&H web. Forty-five (45) ESD staff responded with suggestions and ideas. The summary of the results is discussed in the safety committee.
- The ESD SAC representative is a safety committee member and communicates all institutional issues to the committee.

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- The safety coordinator is active in the institutional committees and provides insight on best ways to evaluate and implement new processes.

ESD FY10 Self-assessment Measures

The following ES&H performance measures are identified and further evaluated as part of the FY10 ESD Self-Assessment Program performance criteria.

- (i) OJT was not consistently documented. Notwithstanding the widespread use of OJT, clear and formalized expectations for the “competency expectations” and the need to have evidence of such are not consistently evident. ESD will evaluate ways and provide guidelines in identifying and documenting OJT. (HSS mini audit- opportunity for improvement)
- (ii) Personnel from the Division occasionally have assignments away from LBNL. In some cases it is believed these personnel are Work Leads (and retain their Work Lead authorities and responsibilities while on travel). In such cases, it is not clear if a formal safety delegation either occurs or is required when a Work Lead is away. (HSS mini audit- opportunity for improvement)
- (iii) Work with the ESH division to develop task-based JHA for ESD off site fieldwork. ESD identified the need to incorporate off-site field activities in individual JHAs. In FY09, this item was investigated and discussed with JHA program manager but it was put on hold due the HSS findings.
- (iv) ESD will discuss with the EHS Ergo staff the possibility to include the work location on the employees training profile next to the ERGO self-assessment course (EHS059/EHS058). This issue was identified in the FY09 ESD measures.

In conclusion, ESD has fully and successfully implemented the ISM plan. The ESD ISM requirements have been communicated throughout FY09 to the staff. The line management has been continuously evaluating the ISM process and opportunities of improvement and corrective actions are listed as part of the process evaluation and feedback. ESD had a number of independent reviews of its ES&H program and was consistently found to implement a strong program.